

ARMY, MARINE CORPS, NAVY, AIR FORCE



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JAAT

MULTISERVICE PROCEDURES FOR JOINT AIR ATTACK TEAM OPERATIONS

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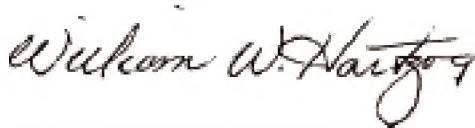
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MULTISERVICE TACTICS, TECHNIQUES, AND PROCEDURES

FOREWORD

This publication has been prepared under our direction for use by our respective commands and other commands as appropriate.



WILLIAM W. HARTZOG

General, USA
Commander
Training and Doctrine Command



J. E. RHODES

Lieutenant General, USMC
Commanding General
Marine Corps Combat
Development Command



G. S. HOLDER

Rear Admiral, USN
Commander
Naval Doctrine Command



RONALD E. KEYS

Major General, USAF
Commander
Headquarters Air Force Doctrine Center

PREFACE

1. Scope

This publication—

(1) Defines multiservice joint air attack team (JAAT) operations and describes the capabilities and responsibilities of the team members.

(2) Describes responsibilities associated with planning, organizing, and executing multiservice JAAT operations.

(3) Provides the tactics, techniques, and procedures (TTP) needed for command and control and employment of multiservice JAAT operations.

(4) Provides standardized briefing guides for multiservice JAAT operations.

2. Purpose

This publication standardizes TTP among the services for planning and executing JAAT operations.

3. Application

This publication applies to the operating forces of all services. It provides multiservice TTP for joint air attack team operations. Although the focus of the publication is at the tactical level, it has application for planning and warfighting personnel at all echelons. Any service/component may initiate a JAAT. JAAT is merely a method of employing forces. The terms maneuver force commander and maneuver commander are representative of any commander (air, land, or sea).

4. Implementation Plan

Participating service command offices of primary responsibility (OPRs) will review this publication, validate the information, and reference and incorporate it in service manuals, regulations, and curricula as follows:

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5. User Information

a. The TRADOC-MCCDC-NDC-AFDC Air Land Sea Application (ALSA) Center developed this publication with the joint participation of the approving service commands. ALSA will review and update this publication as necessary.

b. This publication reflects current joint and service doctrine, command and control organizations, facilities, personnel, responsibilities, and procedures. Changes in service protocol, appropriately reflected in joint and service publications, will likewise be incorporated in revisions to this document.

c. We encourage recommended changes for improving this publication. Key your comments to the specific page and

paragraph and provide a rationale for each recommendation. Send comments and recommendation directly to—

Army

Commander
US Army Training and Doctrine Command
ATTN: ATDO-A
Fort Monroe VA 23651-5000
DSN 680-3153 COMM (757) 727-3153

Marine Corps

Commanding General
US Marine Corps Combat Development Command
ATTN: C42
3300 Russell Road
Quantico VA 22134-5021
DSN 278-6234 COMM (703) 784-6234

Navy

Naval Doctrine Command
ATTN: N3
1540 Gilbert St
Norfolk VA 23511-2785
DSN 565-0563 COMM (757) 445-0563
E-mail: ndcjoint@nctamslant.navy.mil

Air Force

Headquarters Air Force Doctrine Center
ATTN: DJ
216 Sweeney Blvd, Suite 109
Langley AFB VA 23665-2722
DSN 574-8091 COMM (757) 764-8091
E-mail: afdc.dj@langley.af.mil

ALSA

ALSA Center
ATTN: Director
114 Andrews Street
Langley AFB VA 23665-2785
DSN 574-5934 COMM (757) 764-5934
E-mail : alsadirector@langley.af.mil

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JAAT
Multiservice Procedures
for
Joint Air Attack Team Operations

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EXECUTIVE SUMMARY

JAAT Multiservice Procedures for Joint Air Attack Team Operations

The Joint Air Attack Team (JAAT)

The multiservice J AAT is a coordinated attack by rotary- and fixed-wing aircraft, normally supported by artillery or naval surface fire support. Ground or airborne electronic warfare systems may also support the J AAT. J AAT operations support the joint force commander (J FC) in offensive and defensive operations day or night.

Planning

The J AAT offers the commander unique strengths. J AAT operations provide mutual support with an increase in each member's survivability and a capability to mass combat power through diverse ordnance and employment procedures. The maneuver commander has the responsibility for integrating J AAT missions into the battle plan. The requesting commander's staff plans for, organizes, and coordinates J AAT operations to support this plan. Successful J AAT execution depends upon careful mission analysis, coordination, and planning. Historically, difficulties in execution are a result of poorly understood planning requirements.

JAAT Execution

Upon receipt of a J AAT mission, the J AAT mission commander must integrate five components of preplanned or immediate J AAT execution—airspace coordination measures, check in and briefings, firepower timing options, attack methods, shifting targets, and disengagement. The J AAT mission commander must also consider risk management as it applies to identifying hazards and implementing controls during planning, preparation and execution. Night employment of the J AAT is also an option with consideration for tactics requiring more deliberate tempo and strict adherence to basic procedures.

Summary

The key to an effective J AAT operation is a clear understanding of component capabilities and employment options and how they can be synchronized to achieve maximum effectiveness. This publication is intended to aid in this understanding.

PROGRAM PARTICIPANTS

The following commands and agencies participated in the development and review of this publication:

Joint

Joint Warfighting Center, Doctrine Division, Ft Monroe, VA

Army

HQ TRADOC, ATDO-A, Ft Monroe, VA
Eighth USA, APO AP
I CORPS, Ft Lewis, WA
III CORPS, Ft Hood, TX
V CORPS, Unit 28357, APO AE
XVIII CORPS (Airborne), Ft Bragg, NC
Operations Group, Eagle Team, National Training Center, Ft Irwin, CA
HHC 1-210, Ft Rucker, AL

Marines

Marine Corps Combat Development Command, Quantico, VA
C3F TACD&E, San Diego, CA
Expeditionary Warfare Training Group Atlantic, Norfolk, VA
MAWTS-1, Yuma, AZ

Navy

Naval Doctrine Command, Norfolk, VA
SWATSLANT, NAS Oceana, VA
Naval Strike Warfare Center, Fallon, CA

Air Force

AFDC/DJ, Langley AFB VA
57 Wing/DTW, Nellis AFB NV
USAF Weapons School/WST, Nellis AFB, NV
USAF Weapons School, F-16 Division, Nellis AFB, NV
70th FS, Moody AFB, GA
81st FS, APO AE
Air Warrior, Nellis AFB NV
Air Warrior Detachment, Ft Irwin CA
18th ASOG/AVN TACP, Pope AFB, NC
25 ASOS, Wheeler AAF, HI
USAF AGOS, Hurlburt Field, FL
DET 6 57th Wing, Ft Irwin, CA

Other

OSD J NCAS J FS, Eglin AFB, FL

Chapter I

THE JOINT AIR ATTACK TEAM

1. Background

A joint air attack team (J AAT) operation is a coordinated attack by rotary- and fixed-wing aircraft, normally supported by artillery or naval surface fire support. Ground or airborne electronic warfare systems may also support the J AAT. J AAT operations support the joint force commander (JFC) in offensive and defensive operations day or night.

2. Command Responsibilities

Normally, the maneuver force commander, within an assigned operational area, is the individual responsible for determining when a J AAT is necessary, but any commander (air, land, or maritime) may request a J AAT. In this publication, the terms maneuver force commander and maneuver commander are representative of any commander (air, land, or sea) with overall command responsibilities within an area of operations (AO).

Designation of a mission commander occurs after coordination between the requesting commander and supporting commanders. The mission commander is responsible for the planning, coordinating, and execution of the J AAT. The mission commander has tactical control (TACON) of J AAT assets to support the commander's battle plan.

3. Rotary-Wing Element

Rotary-wing aircraft provide firepower, target acquisition, designation, and mission coordination to the J AAT. The Army normally provides attack and scout rotary-wing aircraft for J AAT operations. Under

certain circumstances, the Marine Corps could provide rotary-wing attack aircraft. The Navy and Air Force do not have rotary-wing attack aircraft.

a. Army. The Army employs attack and cavalry helicopters in J AAT operations. AH-64 Apaches are organic to attack battalions and are used in the attack as well as the reconnaissance role. OH-58D Kiowa Warriors are organic to light divisions and cavalry units and are used primarily for reconnaissance, but they do have limited attack capabilities. As a minimum, Army helicopters operate in pairs and typically operate in sections or troops/companies of four to eight aircraft. They are usually employed as three flights to provide continuous coverage for the J AAT but may be employed as a battalion-sized flight of 24 aircraft to achieve massed fires on the target. Army aircraft are less vulnerable to enemy air defenses at night; therefore, they generally conduct deep operations at night. Army rotary-wing characteristics and capabilities may be found in Appendix B.

b. Marine Corps. The Marine Corps has limited rotary-wing attack assets. The primary mission of these attack aircraft is to conduct offensive air support (OAS) and armed escort flights for assault support helicopters. Their additional missions are to provide forward air controller (airborne) (FAC[A]) and fire support coordination in aerial and ground operations within an objective area. Marine Corps rotary-wing attack aircraft may operate in conjunction with observer aircraft and/or other tactical air control party (TACP) assets of the Marine air-ground task force (MAGTF). Because of the limited number of assets and the dedicated mission of Marine Corps attack aircraft, they will not normally be

tasked to provide support for J AAT operations. If tasked, however, the MAGTF could provide the rotary-wing attack element of a J AAT with several configurations. Normally AH-1W Super Cobra attack helicopters and/or UH-1N helicopters will form the team or teams as required. Marine Corps attack helicopter characteristics are in Appendix B.

4. Fixed-Wing Aircraft

Fixed-wing aircraft will employ close air support (CAS) procedures and tactics, described in Joint Publication 3-09.3, Joint Tactics, Techniques, and Procedures for Close Air Support, during J AAT operations. In addition to exercising control of the aircraft, the FAC(A) may also provide air reconnaissance, surveillance, target marking, and communications.

a. Navy. All tactical fixed-wing Navy aircraft are capable of supporting J AAT operations. (EA-6B aircraft may be able to support J AAT operations with their specific mission roles.) All F-14 squadrons have FAC(A) qualified aircrews who routinely train in J AAT operations, including control and coordination of fixed-wing aircraft, rotary-wing aircraft, and indirect fire support integration and deconfliction. Each air wing will typically deploy with 12 to 16 FAC(A) qualified aircrew. Navy FAC(A) aircrew train routinely with Army and Marine Corps attack helicopters in J AAT operations. All other Navy tactical fixed-wing aircrews have limited training in J AAT operations and are generally only exposed to a J AAT once or twice a year. Navy fixed-wing aircraft characteristics are in Appendix B.

b. Marine Corps. All tactical fixed-wing Marine aircraft are capable of supporting J AAT operations. (EA-6B aircraft may be able to support J AAT operations with their specific mission area roles.) The limited number of tactical fixed-wing Marine aircraft within the MAGTF may limit the J AAT operation sortie availability. Marine

fixed-wing aircraft routinely integrate with Marine attack helicopters while conducting OAS training and occasionally train with Army attack helicopters in J AAT operations. Marine tactics maximize standoff weapon delivery techniques and night operations. Marine Corps fixed-wing aircraft characteristics are in Appendix B.

c. Air Force. Air Force CAS aircraft are capable of performing J AAT operations. Only qualified crew members are authorized to participate in J AAT. Air Force members will execute J AAT in accordance with AFI 11-214, Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations, and ACCR 55-26, Joint Live Fire Training Operations Fighter/ Bomber/ Reconnaissance/ Airlift/ Special Operations, following CAS procedures detailed in Joint Publication 3-09.3. Air Force fixed-wing aircraft characteristics are found in Appendix B.

5. Indirect Fire Support

Indirect fire support (artillery, mortars, and/or naval surface fire) should be planned to support and augment the firepower of J AAT operations. Normally fire support provides suppression of enemy air defenses (SEAD), target marking, and laser designation. Additionally, fire support may provide close fires, fires in depth, and counterfire. J AAT indirect fire support requirements generally use the same request, planning, coordination, control, and execution procedures as ground operations. The Army, Marine Corps, and Navy provide indirect fire support. **(Note: An Air Force commander requesting a J AAT must also request all indirect fire support the J AAT will require. The designated mission commander will coordinate indirect fire support requirements with the air mission commander [AMC] and fire support element[s] [FSE] in whose zone[s] the J AAT will occur).**

a. Army. The FSE of the maneuver commander who requests or orders the J AAT will plan for, coordinate, and oversee the execution of fire support for the J AAT. The mission commander should contact the FSE if the mission requires additional fire support or other assistance. The FSE coordinates the requested support. If a maneuver commander requests or orders a J AAT that is to take place in another commander's AO, (that is, division J AAT in brigade AO), then that commander's FSE must coordinate with the FSE in whose AO the J AAT is to take place. Army artillery characteristics are in Appendix C.

b. Marine Corps. The Marine Corps has limited artillery assets that provide general and direct fire support to the ground force within the MAGTF. Because they are limited, these assets will not normally be tasked to support J AAT

operations outside or not adjacent to the objective area. Within the MAGTF, the fire support coordination center (FSCC) of the supported unit(s) requesting the J AAT operation will assist in the planning for artillery support. Marine Corps artillery characteristics are in Appendix C.

c. Navy. Naval surface fire support for Army units is coordinated through the Marine Corps Air and Naval Gunfire Liaison Company (ANGLICO). The ANGLICO division and brigade liaison teams are normally attached to the FSE of the supported division or brigade. These teams are responsible for planning, liaison, control, coordination, and employment of supporting arms. Navy FAC(A)s are qualified to perform artillery air spot and calls for fire in support of the maneuver commander's battle plan.

Chapter II

PLANNING

1. Operational Planning Considerations

a. The J AAT offers the commander unique strengths. J AAT operations provide mutual support with an increase in each member's survivability and a capability to mass combat power through diverse ordnance and employment procedures. This includes reconnaissance, surveillance, and communications redundancy, combined with an enhanced force protection capability.

b. The maneuver commander has the responsibility for integrating J AAT missions into the battle plan. The requesting commander's staff plans for, organizes, and coordinates J AAT operations to support this plan. Successful J AAT execution depends upon careful mission analysis, coordination, and planning.

(1) Mission. The planning process begins when during mission analysis, the requesting commander/staff determines that employing J AAT will assist in accomplishing the mission. J AAT engagement area (EA) development and distribution of all fires must be part of developing the plan. Because each of the members of the J AAT retains their own command and control (C2) system, mission planning must be a coordinated effort. Constant coordination is desired between requesting commander, mission commander, FAC(A), fixed- and rotary-wing representative, TACP, fire support officer (FSO) and the air support operations center (ASOC). As elements of the mission change all members must be informed so they can adjust accordingly.

(2) Intelligence Preparation of the Battlefield. A key ingredient to the success

of the J AAT intelligence effort is the continuous collection and appropriate dissemination of information. The mission commander requires continuous information on the objective before, during, and after the mission. The intelligence officer (G-2/S2) is responsible for the intelligence preparation of the battlefield. The G-2/S2 identifies the target, target area, named areas of interest, enemy defenses, enemy and friendly decision points, and a time window when the target will be active in the EA. Timely J AAT employment is determined by identifying key enemy events that are target indicators of the enemy's course of action (COA) and may act as the trigger for execution of a preplanned attack. The G-2/S2 coordinates the collection effort, refines the information, and ensures the information is received by planning staffs and supporting units. The intelligence preparation of the battlespace (IPB) process is continuous, occurring before, during, and after the J AAT to ensure the most up-to-date information on the enemy's activity is available during the planning and execution phases.

(3) Threat Air Defense (AD) Environment. The mission commander considers how various elements of the J AAT can assist to neutralize or suppress the enemy AD.

(4) Terrain Analysis. Planners should ensure the most effective use of terrain. Terrain analysis is conducted to identify EA(s), ground and air avenues of approach, and gaps in threat AD due to terrain. Terrain analysis also aids in determining employment methods and selecting ingress and egress routes.

(5) Weather. Weather conditions may limit the capabilities of aircraft and weapons. High humidity, fog, and precipitation reduce visibility and the effectiveness of infrared (IR) devices and interfere with lasers. Low ceilings also affect the range and employment of Maverick and Hellfire missiles since the trajectory may put the missile in the clouds. High temperature and pressure can limit the range and weapons payload of aircraft. High or gusting winds affect accuracy of indirect weapons employment and can limit the use of rotary-wing aircraft. If weather forces the cancellation of one or more of the J AAT components, a contingency plan should be derived.

(6) Assets. The commander/staff should determine what assets are required and available to accomplish the J AAT. Assets considered include—combat air patrol, tankers, unmanned aerial vehicles (UAVs), Airborne Warning and Control System (AWACS), airborne battlefield command and control center (ABCCC), fixed-wing aircraft, reconnaissance/collectors, rotary-wing assets, and electronic warfare (EW) assets.

(7) Time Available. The more complex the J AAT mission, the more planning time required. A planning horizon of 36 hours usually allows time for a complete joint air tasking order (ATO) cycle. Anything less can be planned but may not be in the joint ATO. ATO requirements are discussed in Joint Publication 3-56.1, Command and Control for Joint Air Operations. Include requests for fighter aircraft and reconnaissance aircraft early in the planning process. A staff that has prior J AAT training and a working standing operating procedures (SOP) can significantly reduce the amount of planning needed to conduct a successful operation. An immediate or spontaneous J AAT can be accomplished with minimum coordination. A time, location, and common frequency for all participants may suffice

in an immediate or spontaneous J AAT situation. The tactics and techniques in Chapter III are an excellent guide to conducting immediate or spontaneous J AAT operations successfully.

(8) Synchronization. A J AAT operation is synchronized at two levels. At the first level, the J AAT operation must be synchronized with the overall operation. The second level involves the synchronization of the various elements during the execution of the J AAT operation. The requesting commander is responsible for ensuring synchronization at the first level and the mission commander is responsible for ensuring synchronization at the second level. Achieving both levels of synchronization requires an understanding of the individual elements of the J AAT.

2. Battlespace Considerations

a. J AAT Operations. When planning a J AAT operation, the proximity of friendly forces must be considered. The requesting commander will define close proximity to friendly forces. Special emphasis must be placed on preventing fratricide. J AAT operations beyond the fire support coordination line (FSCL) must be coordinated with the joint air operations center (J AOC) through the battlefield coordination detachment (BCD).

b. EA Development. The EA is an area in which the commander intends to fix and attack the enemy force with massed fires of all available weapons. EAs are terrain-oriented control measures that focus the J AAT fires. Fire distribution planning ensures effective fires throughout the EA. To develop an EA, the IPB process determines where the enemy is currently located, where they will go, where best to engage them, and when they will be there. The commander selects the EA based on the IPB. The EA then becomes the focus for J AAT planning. J AAT assets are

coordinated and integrated to destroy the enemy in the EA through massed firepower.

c. Fire Distribution Plan. Once the EA is developed, the mission commander develops the fire distribution plan to avoid redundancy, minimize risk of fratricide, and maximize the effects of long-range weapon systems.

d. Command, Control, and Communications (C3).

(1) Planners must establish command and control procedures for conducting the attack. A good SOP that members of the combined arms team understand greatly reduces command and control coordination requirements. Every effort should be made to involve each community in the planning as early as possible. In establishing the “team” part of J AAT, face-to-face meetings help.

(2) Communications among J AAT participants is key to mission effectiveness. Designing a J AAT communications plan and disseminating it early to participants helps ensure timely radio contact. Once developed, the communications plan is coordinated with the mission commander. Considerations include—using tactical air coordinator (airborne)/forward air controller (airborne) (TAC[A]/FAC[A]) as a radio relay; UAV communications node (UCN) as a communications relay platform; the availability of Have Quick and secure radios; and providing all components with the appropriate frequency and authentication. Additionally, friendly force AD units operating along ingress/egress routes and in the AO must be informed of J AAT missions occurring in the area.

e. Fire Support. The maneuver commander, TACP, fire support coordinator (FSC)/FSO, operations officer (G-3/S3), G-2/S2, Army airspace command and control (A2C2) element, Army aviation liaison officer (AVN LNO), and the mission commander work together to ensure adequate fire support for the J AAT.

(1) Indirect fires. Indirect fire support can greatly increase the survivability of J AAT aircraft and the destruction of the enemy. Furthermore, it can be used to begin the attack, suppress or destroy enemy AD, force armored vehicles to deploy, and create confusion for the enemy.

(2) Close Fires. Fire support can attack targets in the EA to assist the J AAT. Planners should consider the effects of close fires might obscure the target area, decreasing the ability of pilots to acquire targets. Using precision-guided artillery munitions, such as Copperhead to engage high-payoff targets can minimize obscurants. However, precision-guided munitions require detailed planning and coordination with observers, artillery firing units, and the mission commander.

(3) Counterfires. Rotary-wing attack aircraft are vulnerable to enemy fire support during the J AAT operation. Friendly indirect fire support assets should be allocated to counter the enemy fire support capability. Counterfire radars should be coordinated early to facilitate cueing and rotary-wing battle position identification.

f. Airspace Coordination. There are four methods used to establish an airspace coordination area (ACA) to deconflict attack helicopter and fixed-wing aircraft from indirect fires: lateral separation, altitude separation, altitude and lateral separation, or time separation. The fire plan includes appropriate airspace coordination measures and will coordinate use of ACAs for J AAT operations. **Note: For more information on ACAs see Joint Publication 3-52, Doctrine for Joint Airspace Control in a Combat Zone; Joint Publication 3-56, Doctrine for Command and Control Operations; Joint Publication 3-56.1, Command and Control for Joint Air Operations; and Joint Publication 3-09.3, Joint Tactics, Techniques and Procedures for Close Air Support (CAS).**

3. Target Marking/Designation

Target acquisition and identification is critical to effective J AAT operations. There are three main techniques of marking a target. The first is a marking round from any of the J AAT elements; second is laser designation; and third is IR "pointer" for night operations.

a. Marking Considerations. All fire support ground laser designators can be used to designate targets for laser guided munitions (Copperhead, Hellfire missiles, laser guided bombs, etc.) and/or laser spot tracking devices. Several fire support assets could be made available to do this. Army fire support teams (FISTs) and combat observation and lasing teams (COLTs), Marine forward observer teams/shore fire control parties, and forward air controllers (FACs) can use lasers to designate targets. Laser equipped fixed- and rotary-wing aircraft can also provide laser designation and calls for fires during the day or night.

b. Laser Coordination. When using multiple lasers in the same area, laser pulse repetition frequency codes must be coordinated. During planning, the laser geometry must be coordinated to allow best acquisition by laser-guided weapons (LGWs) and aircraft laser spot trackers (LSTs). In addition, laser geometry should exclude the designator from the field of view (FOV) for LGW and LST (Appendix A contains detailed information). A laser employment plan is part of any mission that includes target designation, particularly multiple lasers.

c. IR Marking Devices. For operations involving night vision devices, IR pointers may be used to mark/designated targets. See Joint Publication 3-09.3 for a more detailed discussion of night friendly position and target marking devices. Also see Appendix B for which aircraft are equipped with night vision devices/goggles.

4. Sources of JAAT Fire Support

a. Artillery. Sources of artillery support vary from brigade to division to corps level. At brigade, indirect fires may be available from the direct support or reinforcing field artillery battalion or naval surface fire support. Mortars and electronic attack support may also be coordinated through the maneuver brigade S3 and fire support element. At division and corps indirect fires are normally provided by field artillery battalions assigned a general support or general support-reinforcing mission. The division or corps G-3 and fire support element coordinate for naval surface fire support when it is available. Mortar indirect fire support is normally not available for tasking at division and corps.

b. Mutual Support. During rotary-wing movement to contact, the fixed-wing element of the J AAT may be capable of providing additional threat information and SEAD for the attack helicopter component. Because of their higher operating altitudes and sensors, fixed-wing aircraft can often detect AD threats quicker than the attack helicopter force can. Actual engagement of these threats should be coordinated by the mission commander, because helicopters offer significant advantages in attacking some SEAD targets while fixed-wing aircraft can successfully engage others. If specific AD systems are known to be in the area, it may be possible to preplan mutually supporting SEAD actions. Other forms of dedicated SEAD should be considered first, however, since time and fuel may be a limiting factor for the J AAT participants. Electronic countermeasures pods carried by some fixed-wing strike aircraft are capable of limited jamming in support of other aircraft. When possible, J AAT operations should be conducted concurrently with theater level joint suppression of enemy air defenses (J -SEAD) operations, thereby benefiting from airborne jamming and defense suppression platforms operating in the same area.

c. J -SEAD. J -SEAD operations can enhance survivability for J AAT elements operating in the EA as well as during the ingress/egress phases.

(1) J -SEAD in and around the EA can be an important part of J AAT. The priority of the initial observed indirect fires is to suppress enemy AD systems. Priority of initial rotary-wing fires is to suppress remaining enemy AD systems to protect themselves and fixed-wing aircraft.

(2) A separate J -SEAD may be conducted along flight routes outside of the J AAT EA to assist aircraft ingress and egress.

(3) J -SEAD assets are employed according to mission objectives and system capabilities. Suppression is accomplished through lethal or nonlethal means or a combination of both. Destructive means are cumulative and employ direct and indirect fire weapons. Disruptive means temporarily neutralize enemy ADs. Ground, air, and naval standoff jamming should be part of the overall battle plan. For a more detailed discussion of how to accomplish a J -SEAD operation refer to Joint Publication 3-01.4, Joint Tactics, Techniques, and Procedures for Joint Suppression of Enemy Air Defenses (J -SEAD).

d. Ingress and Egress. AD threat suppression should be provided while friendly aircraft ingress, attack, or egress the EA. During the J AAT, enemy air defense artillery (ADA) can be neutralized. Helicopters accompanying lead enemy attack elements constitute a threat to the J AAT. The ability to rapidly suppress these threats is critical. While rotary- and fixed-wing aircraft react quickly, consideration should be given to indirect fire support assets that can execute rapidly by using preplanned targets. The asset allocation decision should be made early and should take into account such factors as reaction time, weapons effects/duration, and economy. Most ADA can be neutralized or

suppressed by observed fire using dual-purpose improved conventional munitions (DPICM) or high explosive (HE) projectiles with variable time (VT) fuses.

5. JAAT Planning Guideline

a. Effective preplanned J AAT operations depend on the IPB, the resources to conduct the J AAT, and time for the staff to plan the operation.

b. The following guideline provides a good starting point for J AAT planning:

(1) Commander's Guidance.

- (a) Friendly situation.
- (b) Enemy situation.
- (c) Success criteria.

(2) Intelligence/Weather.

- (a) Collection plan/products request.
- (b) Plan for updates before launch and en route.
- (c) Enemy vulnerabilities, possible courses of action.
- (d) Enemy air threat/type/location (including air and surface means).
- (e) Type of targets and size.
- (f) Target priorities.
- (g) Target activity.
- (h) Assets/weapons-to-target/environment match.
- (i) Weather.
- (j) Sensor employment plan.
- (k) Alternate targets/contingency plans.

(l) Electrooptical tactical decision aids (EOTDA).

(m) Mission abort criteria/notification procedures.

(3) EA.

(a) Success criteria.

(b) Tactics and attack options.

- High versus low threat considerations.

- Day versus night considerations. Transition from day to night.

(c) Firepower timing.

(d) Fire support coordination measures (FSCMs).

- Aircraft positioning and EA flow.

- Ordnance trajectory.

- Fragmentation/illumination effects.

- Control points and attack by fire/battle positions.

(e) Ingress/egress routes.

(f) Friendly fire support locations and capabilities.

(g) Provisions for SEAD/J-SEAD.

(h) Friendly AD artillery weapons coordination.

(i) Locations of other friendly units.

(j) Timing options.

(k) Time on target (TOT) or time to target (TTT) methods.

(l) Attack methods (see Chapter III).

- Combined, sectored (see Chapter III).

(m) Target area mechanics/geometry.

- Target reference point (TRP).

- Target sort.

- Laser employment plan.

- Target marking options.

(n) Disengagement considerations.

- Mutual support.

- Fires.

- Sensor support.

- Communications relay.

- Combat search and rescue (CSAR)/imbedded or on-call.

- Collection of BDA.

(4) Command and Control.

(a) Communications (frequencies, Have Quick procedures, and authentication).

(b) EW considerations.

(c) Lost communications procedures.

(d) Egress/return to force (RTF) procedures.

(e) ROE/training rules.

(f) Risk management.

(g) Critical information flow.

6. Army/Air Force Component

a. Request Procedures.

(1) Preplanned Fixed-Wing Request. When adequate planning time exists (normally a minimum of 36 hours), a commander requests a J AAT with an air support request (AIRSUPREQ) message. The request should state J AAT mission to ensure availability of aircraft and pilots qualified to conduct J AAT operations. An Army request for J AAT is processed through Army fire support channels up through the corps for approval. The Commander Army Forces (COMARFOR) headquarters consolidates and prioritizes AIRSUPREQs received from the corps and subordinate units and forwards them to the BCD at the J AOC. At the J AOC, air requests from all components are considered and those with sufficient priority are included in the ATO. Simultaneously, the air liaison officer (ALO) assists the commander in planning the operation. Air Force request for a J AAT will be considered at the J AOC with the BCD in a similar manner.

(2) Immediate Fixed-Wing Request. When the preplanning time is not available to submit the request in time for publication in the ATO, the TACP will submit an immediate

air support request, Joint Tactical Air Strike Request (DD Form 1972), through the Air Force Air Request Net (AFARN) directly to the ASOC at the corps. The TACPs at intermediate levels monitor and inform corresponding commanders of the requests. They are allowed a designated time interval (theater specific, usually 10 minutes) to consider disapproving the mission request. A lack of response during the designated time translates into approval (silence is consent). Once the allotted time has expired with no disapproval, the mission is considered valid at those levels. The ASOC forwards the request to the G-3 Air for approval. If approved, the ASOC tasks available on-call fixed-wing aircraft to support the request. If the ASOC has no fixed-wing available it can, with Army concurrence, divert sorties from lower priority targets or request support from lateral or higher commands. The requesting TACP remains the point of contact for mission information.

b. Operational Responsibilities.

The personnel at corps level and below for Army and ASOC level and below for Air Force have key planning responsibilities for employment of a J AAT. Tables II-1 and II-2 list those responsibilities.

Table II-1. Army JAAT Responsibilities

Position	Responsibility
All Ground Maneuver Units	
Commander/S2/S3 FSE/TACP (ALO/ETAC)	Identify requirement/targets for J AAT.
All Aviation Units	
Aviation Commander	Act as J AAT commander (if designated). Execute J AAT operations. Coordinate with ground maneuver unit. Coordinate with other members of J AAT. Provide detailed planning guidance to crews.
Brigade	
Commander /XO/ S3	Develop/approve concept for J AAT employment to support scheme of maneuver. Supervise staff planning effort.
S3 Air	Coordinate airspace. Ensure timely submission of preplanned fixed-wing requests through Army channels.

Table II-1. Army J AAT Responsibilities (continued)

Position	Responsibility
S2	Prepare IPB. Develop intelligence. Conduct target value analysis to identify high payoff targets to the commander and S3. Conduct enemy ADA analysis to identify current threats.
TACP	Recommend best use of fixed-wing aircraft to support maneuver. Coordinate preplanned requests. Prepare immediate fixed-wing requests through air request net. (Requests should specify "J AAT" and contain frequencies, call signs, laser codes, authentication/communications security [COMSEC] procedures). Provides terminal air controller for fixed-wing aircraft during J AAT operations short of the FSCL.
FSE	Plan and coordinate fire support/SEAD.
AVN BDE LNO	Recommend best employment for Army aviation assets. Coordinate with and pass missions to operational control (OPCON) aviation unit. (If Army aviation unit is not OPCON, brigade requests support through division.)
Intelligence and Electronic Warfare Support Element (IEWSE)	Request and coordinate EW support.
AD Artillery LNO	Coordinate AD weapons control status and AD plans. Coordinate airspace control with S3 Air.
Division	
Commander/G-3	Identify requirement for J AAT. Prioritize approved CAS. Prioritize missions for aviation brigade assets. Establishes/approves abort and GO/NO GO criteria.
G-3 Air	Prepare preplanned, fixed-wing request for the commander (request should specify "J AAT"). Forward preplanned requests through Army channels.
G-2	Prepare IPB to identify air avenues of approach and to template the projected enemy AD threat. Evaluate the effects of weather upon J AAT operations. Conduct target value analysis to identify high payoff targets to the commander and G-3. Develop and disseminate intelligence on the enemy situation and especially targeting information. Conduct enemy ADA analysis to identify current threats.
AVN BDE CDR	Advise division commander on best use of aviation brigade. Plan J AAT (division control) as directed by the division commander.
ALO	Recommend best use of fixed-wing aircraft to support maneuver. Prepare immediate fixed-wing request for commander (request should specify J AAT). Forward immediate fixed-wing requests through air request net.
A2C2 Element (consists of personnel as required from ADA, AVN, FS, ALO staff, and ATC; supervised by the G-3 Air)	Coordinate airspace control and AD plan. Coordinate AD weapons control status.
FSE	Develop fire support plan for division/aviation brigade. Coordinate SEAD/fire support.
EW Section	Coordinate EW support.

Table II-1. Army J AAT Responsibilities (continued)

Position	Responsibility
Corps	
Commander/G-3/ALO/Fire Support Coordinator	Set priority for CAS/J AAT and consider J AAT requirements for deep and/or rear operations. Consider OPCON of corps aviation assets to subordinate elements for close operations (generally on a specific mission basis).
Corps Combat AVN BDE CDR	Advise corps commander/G-3 on best use of aviation brigade. Coordinate and execute corps controlled J AAT operations. Provide Army aviation assets for J AAT operations.
G-2	Prepare IPB to identify air avenues of approach and to template the projected enemy AD threat. Evaluate the effects of weather upon J AAT operations. Conduct target value analysis to identify high payoff targets to the commander and G-3. Develop and disseminate the intelligence on the enemy situation and targeting information.
Brigade TACP	Recommend the best use of fixed-wing assets to support maneuver. Prepare fixed-wing request. Forward request to ASOC/FSE.
ASOC/Fighter Duty Officer	Forward requests for additional fixed-wing J AAT assets to J AOC.
FSE	Plan and coordinate fire support for corps J AAT operations. Coordinates SEAD.
AVN Officer	Recommend best employment for Army aviation assets. Coordinate with and pass missions to corps AVN BDE.
A2C2 Section	Coordinate airspace control and AD plan. Relay recommended minimum risk routing to BCD.
EW Section	Coordinate EW support requirements as needed.
BCD, J AOC	
BCD Plans	Coordinate J AAT requests and specific mission requirements.
BCD Operations	Coordinate immediate tasking requirements with J AOC after publication of ATO.

Table II-2. Air Force J AAT Responsibilities

Position	Responsibility
J AOC	
J AOC Combat Plans	<p>Validate J AAT request with BCD and determine asset availability.</p> <p>May initiate J AAT tasking in support of J FC or J FACC objectives.</p> <p>If applicable, have J FACC consult with J FLCC to attain J AAT assets for inclusion on ATO.</p> <p>Task J AAT air assets via ATO.</p>
J AOC Combat Operations	Coordinate execution of ATO.
J FACC	If applicable, coordinate J AAT requirements with affected component commander(s).
All Air Force Wings	
Wing/Group/Squadron Commanders	Develop/approve concept for J AAT employment to support objectives of air operations.
Wing Operations Center (WOC)	Forward request for J AAT through ASOC to J AOC.
Flight Lead	<p>Execute J AAT planning and operations.</p> <p>Coordinate with ground maneuver unit(s), if applicable.</p> <p>Coordinate with other members of J AAT (fire support, etc.).</p> <p>Provide detailed planning guidance to crews.</p>
ASOC	<p>Forward requests for J AAT to J AOC.</p> <p>Identify fixed-wing resources for immediate CAS and J AAT requests.</p>

7. Marine Corps Component

a. MAGTF

The MAGTF is the Marine Corps' primary operating organization for all missions across the range of conflict. MAGTFs are categorized into three types: Marine expeditionary unit (MEU), Marine expeditionary force (MEF), and the special purpose MAGTF (SPMAGTF). The MEU possesses limited C2 capabilities and relies on the Navy to provide most aviation C2 functions. The MEF maintains the personnel and equipment necessary to provide C2 of aircraft and missiles. SPMAGTFs are small, task-organized MAGTFs configured to accomplish missions for which the MEF or MEU are not appropriate.

A deployed MAGTF commander also provides augmentation personnel to J FACC,

if established, as required and directed by higher authority.

A deployed MAGTF commander ensures all MAGTF personnel committed to a hostile environment are familiar with tactics employed for J AAT operations.

A deployed MAGTF provides support to J AAT operations as directed by the J FC in accordance with mission requirements/priority and asset availability.

Deployed MAGTF subordinate commanders ensure their personnel are familiar with J AAT tactics and are capable of meeting individual responsibilities.

(1) Organization. The Marine Corps task organizes its forces for combat operations into MAGTFs. This combined arms force (aviation, ground, command, and combat service support elements) is

trained and equipped for expeditionary operations, including amphibious operations and sustained operations ashore. Each MAGTF is composed of a command element (CE), an aviation combat element (ACE), a ground combat element (GCE), and a combat service support element (CSSE).

The MAGTF commander delegates authority to plan and conduct J AAT operations to the major subordinate commanders in the ACE, GCE, and CSSE. Final approval for a J AAT operation rests with the MAGTF commander.

(a) The ACE is task-organized as required to provide the six functions of Marine aviation. These functions are—

- Air reconnaissance.
- Antiair warfare.
- Assault support.
- Offensive air support.
- EW.
- Control of aircraft and missiles.

The ACE commander, with the approval of the MAGTF commander, plans, integrates, and directs the employment of air assets assigned J AAT missions. The ACE commander coordinates J AAT activities with the GCE, the G-2/S2 intelligence section and G-3/S3 operations and plans section of the ACE, and other air capable components within the joint force. J AAT operations taskings are then published in the air tasking order.

(b) The GCE plans, integrates, and directs the employment of ground forces assets (for example, artillery if used) for J AAT operations. After coordination with the ACE commander, the GCE

publishes J AAT requirements in fire plans and other tasking directives.

(c) The ACE and GCE G-2/S2 sections receive, integrate and validate requirements for J AAT. They develop and direct the intelligence information collection and coordination of J AAT activities. They also correlate and develop intelligence situation assessments for the J AAT operation area.

(d) The ACE G-3/S3 and GCE FSCC, with the assistance of the air, artillery, and naval gunfire liaison officers, plan the J AAT operation. They ensure that operational guidance and all air-ground fire support requirements are integrated into overall MAGTF operations. They also coordinate the operational and intelligence support required for J AAT operations. The FSCC is where J AAT operations planning are normally completed.

(2) Marine Air Command and Control System (MACCS). The MACCS provides the MAGTF with the means to command, control, and coordinate air operations within an assigned sector and to coordinate MAGTF air operations during joint or combined operations. The MACCS is composed of air command and control agencies and surface-to-air missile resources that are tasked from a Marine air control group to fulfill distinct mission requirements. The MACCS is also capable of exchanging early warning and surveillance information via tactical digital information links (tactical digital information links [TADIL] A, B, C, J, Army tactical data links [ATDL]-1, and North Atlantic Treaty Organization [NATO] Link-NATO Air Defense Ground Environment [NADGE]) among other joint/combined air command and control agencies. For a detailed discussion of the MACCS refer to Marine Corps Warfighting Publication (MCWP) 3-25.3, Marine Air Command and Control Systems Handbook. For J AAT operations, the following units of the MACCS may be involved.

(a) Tactical Air Command Center (TACC). The TACC allocates aviation combat element assets to be used in J AAT operations. GCE assets required for J AAT operations are planned within the FSCC. The TACC coordinates operations with the air-capable components of the joint force (required for J AAT operations appearing on the ATO) and the FSCC of the GCE when necessary. The TACC provides the facilities for the ACE commander's staff. The staff is divided into the current operations section and the future operations section within the TACC and is responsible to the ACE commander for the supervision and coordination of all MAGTF air operations. The TACC—

- Publishes, disseminates, and coordinates the ATO.
- Makes decisions regarding allocation of air assets based on guidance from the ACE commander.
- Supervises subordinate MACCS agencies.
- Coordinates with external agencies.

(b) Tactical Air Operations Center (TAOC). The TAOC coordinates and executes the positive control of aircraft entering, transiting, or departing the Marine Corps forces (MARFOR) AOs for J AAT operations.

(c) Direct Air Support Center (DASC). The DASC provides procedural control of J AAT aircraft operating in direct support of, or in close proximity to, MAGTF GCE maneuver forces. The DASC passes the control to a terminal controller for execution of the J AAT mission if necessary. A TACP or FAC(A) can provide terminal control of aircraft executing J AAT operations air reconnaissance.

b. Concept of Operations.

MARFOR performing self-supporting air attack team type operations should use the procedures outlined in this publication.

MARFOR participating in joint combat operations will provide forces and conduct J AAT operations, including supporting operations, as directed by the J FC/higher authority and coordinated by the J FACC, if established.

(1) Command and Control. As prescribed by Joint Publication 0-2, Unified Action Armed Forces (UNAAF), the MAGTF commander will retain operational control of his organic air assets. The primary mission of the MAGTF aviation combat element is to support the MAGTF. During joint operations, MAGTF aviation assets will normally support the MAGTF mission. The MAGTF commander will make sorties available to the J FC for tasking through the J FACC for AD, for long-range interdiction, and for long-range reconnaissance. Sorties in excess of MAGTF direct support requirements will be provided to the J FC for tasking through the J FACC, if designated for the support of other components of the joint force or the joint force as a whole. The theater commander or J FC have complete operational control to—

(a) Assign missions.

(b) Redirect efforts; for example, the reapportionment and/or reallocation of any MAGTF fixed-wing sorties when the J FC has determined that they are necessary for higher priority missions.

(c) Direct coordination among his subordinate commanders to ensure unity of effort in accomplishing his overall mission or to maintain integrity of the force.

(2) When MAGTF aviation assets deploy in advance of the main body, a MAGTF forward command will be established. Operational control remains with the MAGTF commander and is exercised by the MAGTF forward command. In the event the ACE is established in theater and mission capable before the MAGTF begins generating

support requirements, excess sorties will be provided to the JFC for tasking as required until other elements of the advance force arrive or as directed by higher authority.

c. Operational Responsibilities.

Table II-3 describes the responsibilities and functions of MAGTF elements for the coordination of J AAT.

Table II-3. Marine Corps Operational Responsibilities

Element	Responsibility
Command Element	Provides the C2 necessary to facilitate effective planning and execution of operations.
ACE	Provides the air combat arm of the MAGTF.
ACE G-2 Aviation Combat Intelligence Section	Develops and directs the intelligence information collection and coordination of J AAT activities. Correlates and develops J AAT operation area intelligence situation assessments. Ensures the timely coordination with the GCE G-2 and other air components.
ACE G-3 Future Operations Section (FOS)	Plans the J AAT operation and ensures that guidance and air support requirements are integrated into the MAGTF operations. Coordinates J AAT operations operational and intelligence support.
TACC	Provides the MAGTF's aviation arm with critical guidance, direction, and supervision regarding the employment and execution of the six functions of Marine aviation.
TAOC	Provides positive control of air assets operating within the MAGTF area of operation.
DASC	Coordinate and execute the procedural control of aircraft passed to/from the TAOC until the execution of J AAT operations are passed to/from a terminal controller.
GCE	Provides the ground combat arm of the MAGTF.
GCE G-2	Receives, integrates, and validates requirements for J AAT. Develops and directs J AAT operation area intelligence situation assessments collection and coordination. Ensures timely coordination with the ACE G-2 and other components.
FSCC	Plans the execution of J AAT operations and ensures that guidance and all ground and air fire support requirements are integrated into MAGTAF operations. The FSCC also coordinates the operational and intelligence support for J AAT operations.
TACP	Coordinates and executes the terminal control for aircraft within the MAGTF AO for J AAT operations execution.

8. Navy Component

a. Request Procedures.

(1) Navy fixed-wing aircraft supports J AAT operations when tasked by the J FACC or other theater air component commanders. All Navy tactical air wings deploying to a theater of operations are capable of supporting J AAT operations. Since naval forces will not be commanding or directing J AAT operations, any Navy aircraft tasked with supporting J AAT operations will fall under the tactical control of the unit responsible for the J AAT. A deployed carrier air wing (CVW) commander can provide augmentation personnel to the J FACC, if established, as required and directed by higher authority.

(2) A deployed CVW commander ensures that all air wing personnel committed to a hostile environment are familiar with tactics employed for J AAT operations. Subordinate commanders ensure their personnel are familiar with J AAT tactics and are capable of meeting individual responsibilities.

b. Air Operations and Responsibilities.

(1) The CVW commander supports J AAT operations when excess sorties are

available. Any aircrew tasked to support J AAT operations falls under the subordinate control of the appropriate ACE commander in the operation.

(2) The designated FAC(A) aircrew has primary responsibility for air wing training and execution of J AAT support. Whenever possible these aircrew plan and lead any J AAT support requested or tasked by higher authority. The functions and capabilities of these FAC(A) aircrews are as follows:

(a) Aerial reconnaissance.

(b) Radio relay.

(c) Control and coordination of fixed- and rotary-wing aircraft individually or as combined arms. This includes the coordination and control of SEAD to achieve the desired objectives.

(3) While the CVW commander maintains operational control of all organic air assets, sorties will normally be made available to the J FC for tasking through the J FACC in support of J AAT operations.

Chapter III

JAAT EXECUTION

Example of an Immediate J AAT that Worked: Interview of CW3 Ron Thompson, 6-6 Cavalry.

During operation PROVIDE COMFORT in northern Iraq, the U.S. forces routinely conducted both air and ground operations securing and patrolling the NO FLY/EXCLUSION ZONE established by coalition forces. The principal players were a Marine expeditionary unit (MEU), a SEAL team, carrier task force with E-6Bs and F-14s, USAF with AWACS, A-10s and F-16s, US Army AH-64s, British Royal Marines, and a Dutch Engineer unit.

On the day of the mission (summer 1991) the AH-64s were doing a routine reconnaissance to verify directive compliance by the Iraqi forces. Command and control was normally handled by AWACS as we were unable to communicate with ground forces because of terrain. This also allowed for deconfliction of airspace and early warning of other aircraft. After a short time we located six T-64 Iraqi tanks well inside the exclusion area. They were supported by artillery and ADA to the south which were on the border. The AH-64s assumed an overwatch and notified AWACS. Within a few minutes we were joined by two A-10s, two F-16s, and four F-14s. The A-10s and F-16s took up positions both east and west of the tanks. The F-14s were positioned higher and directly overhead. AWACS instructed us to change frequencies to their command net. We were then able to monitor the coordination AWACS was doing between all aircraft. The A-10s were instructed to make a couple of passes at the tanks while the AH-64s covered their breaks. The F-16s were to attack the artillery and the F-14s were to concentrate on ADA and any opposing aircraft that might show up. (These were dry runs.) We were instructed not to engage unless we were fired on or hostile intent was evident by weapons being pointed at us or radar becoming active. During the first pass by the A-10s the tanks moved out at maximum speed to the south and the forces positioned on the border did likewise. We later learned the F-16s were inbound to relieve the A-10s and the F-14s were on routine combat air patrol missions. AWACS displayed a high degree of situational awareness in bringing together three separate branches so quickly for one mission.

1. Basic JAAT Components

There are five components of preplanned or immediate J AAT execution: airspace control measures (ACM); check-in and briefing; firepower timing options; attack methods; and disengagement. The JAAT mission commander must integrate all five basic components to effectively accomplish the assigned mission.

a. ACM. The four common methods to deconflict airspace and weapons danger zones in the target area are—lateral/geographic separation (Figure III-1); altitude separation (Figure III-2); time separation (Figure III-3); and any combination of the above (Figure III-4).

(1) The mission commander is responsible for ensuring that ACMs are established and coordinated with all J AAT participants. Airspace management methods in the objective include ACAs, restrictive fire headings, maximum

ordnance trajectory, minimum altitude, sectors, and timing separation.

(2) Detailed ACMs, disseminated via the DD Form-1972, can be used during preplanned J AAT operations, while immediate missions may require simpler control measures. All participants must understand established control measures.

(3) The following figures illustrate employment of several types of coordination measures. Joint Publication 3-09.3 specifies these measures in detail. In each of the following figures separations should—

(a) Reflect a minimum of 1000 feet vertical separation between lowest planned aircraft altitude and the highest planned trajectory of artillery forces.

(b) Include fragmentation pattern for the particular ordnance.

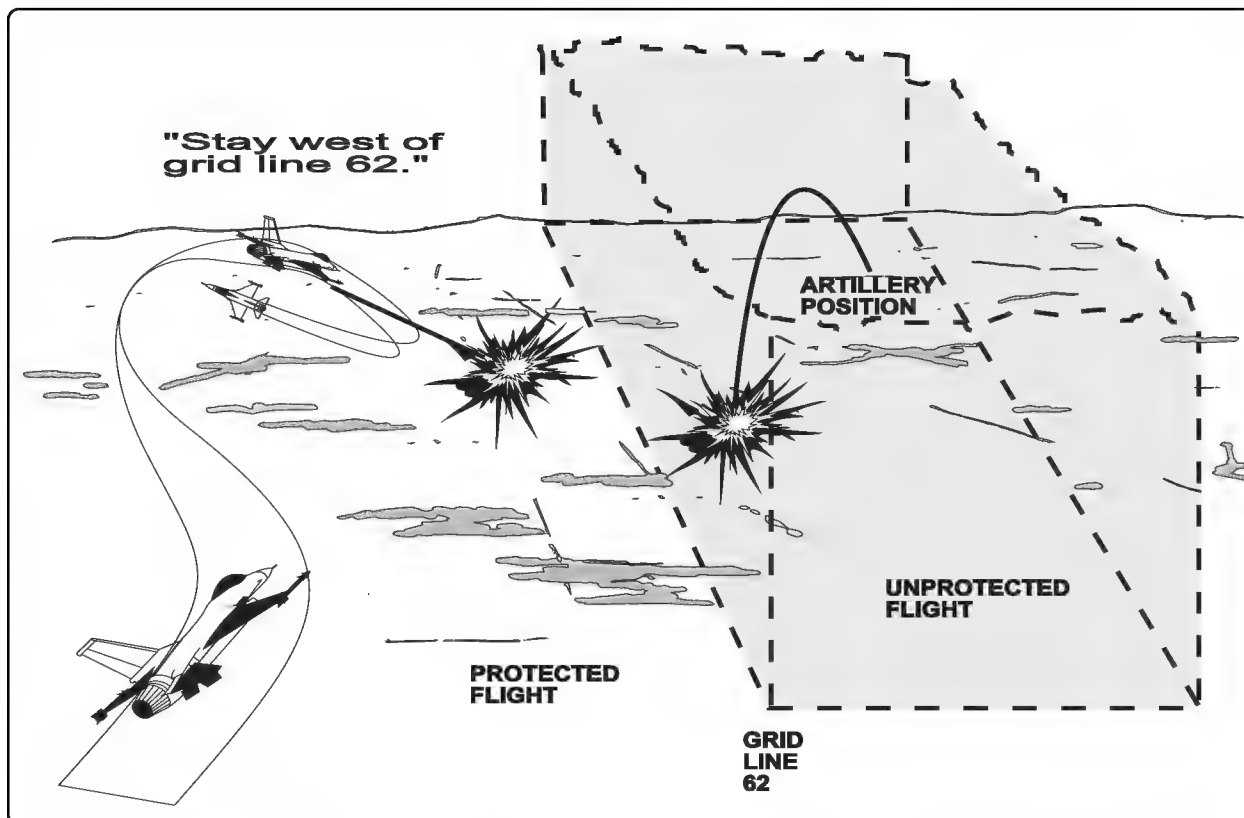


Figure III-1. Lateral/Geographic Separation
(Boundary defined by geographic feature or grid line)

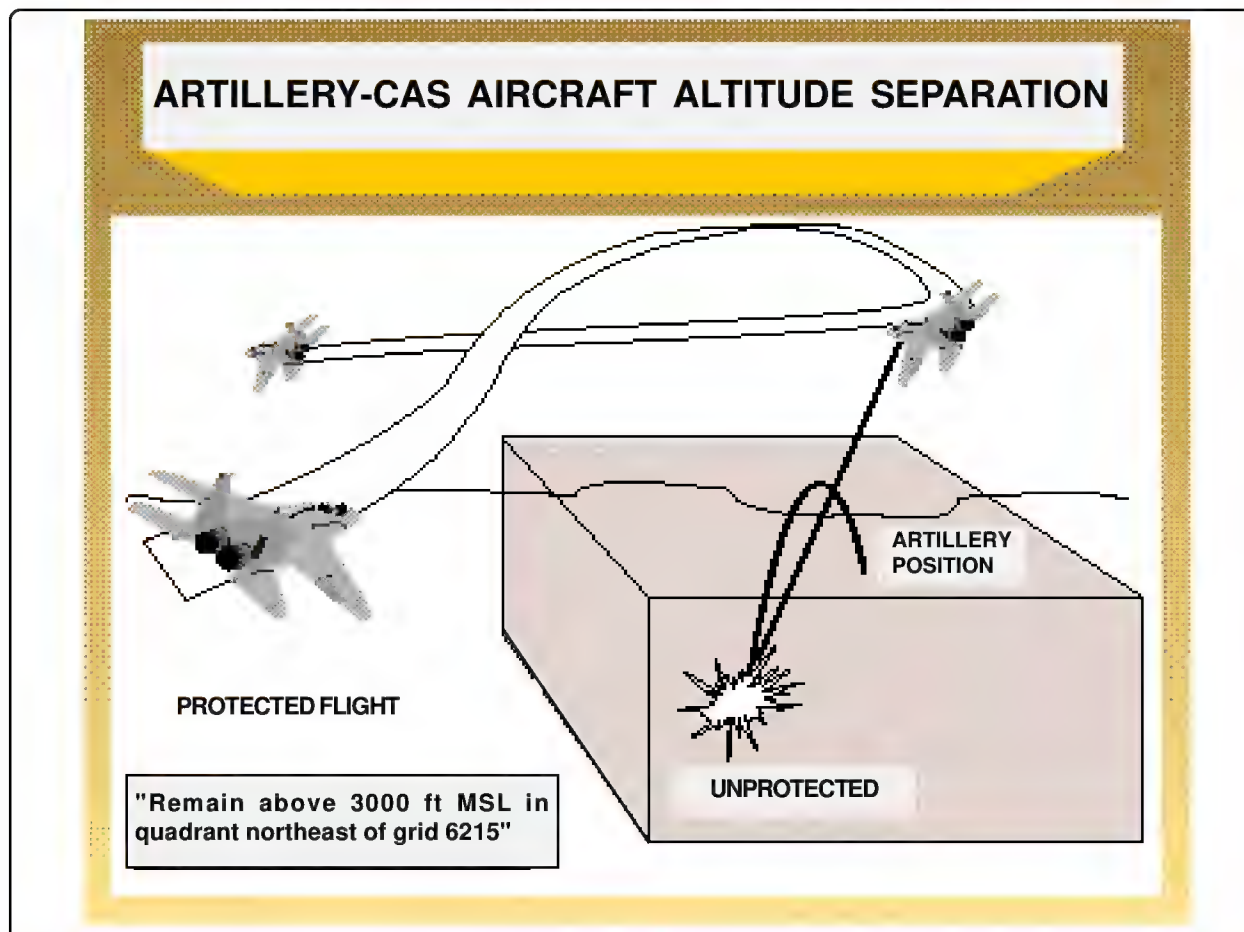


Figure III-2. Altitude Separation

"TOT 1410, SEAD minus 2
through minus 1 and plus 1
through plus 2."

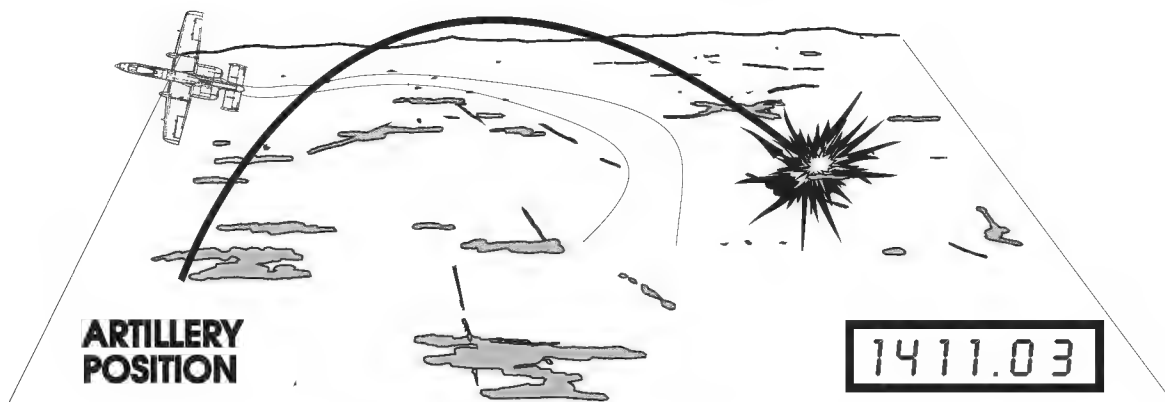
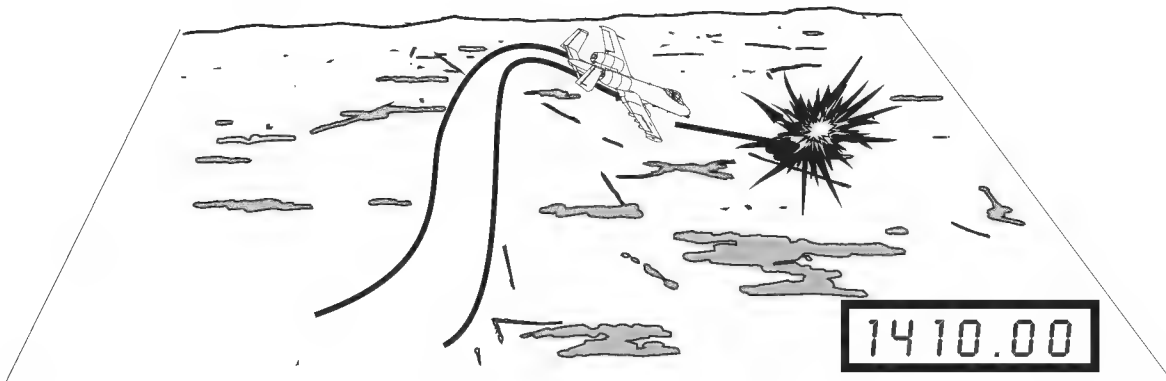
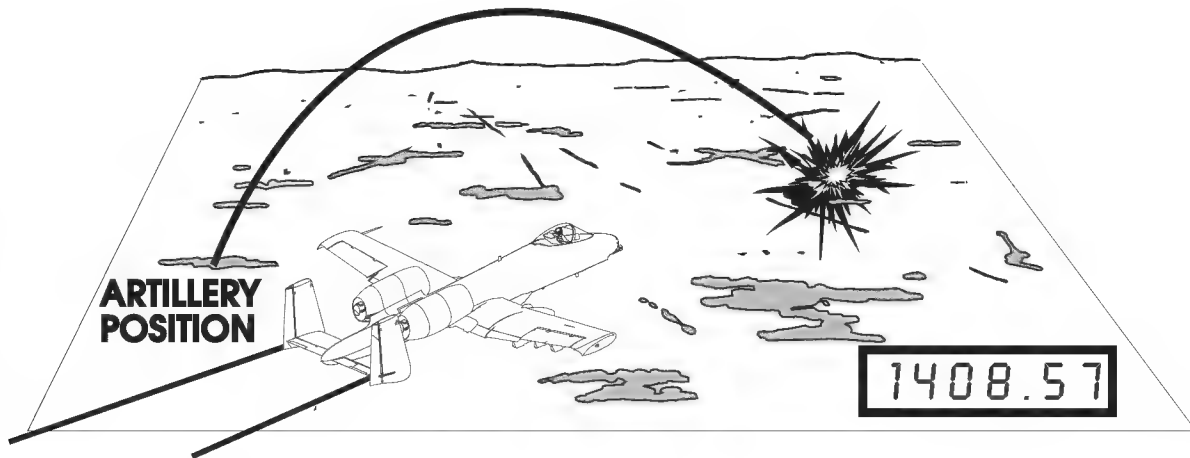


Figure III-3. Time Separation

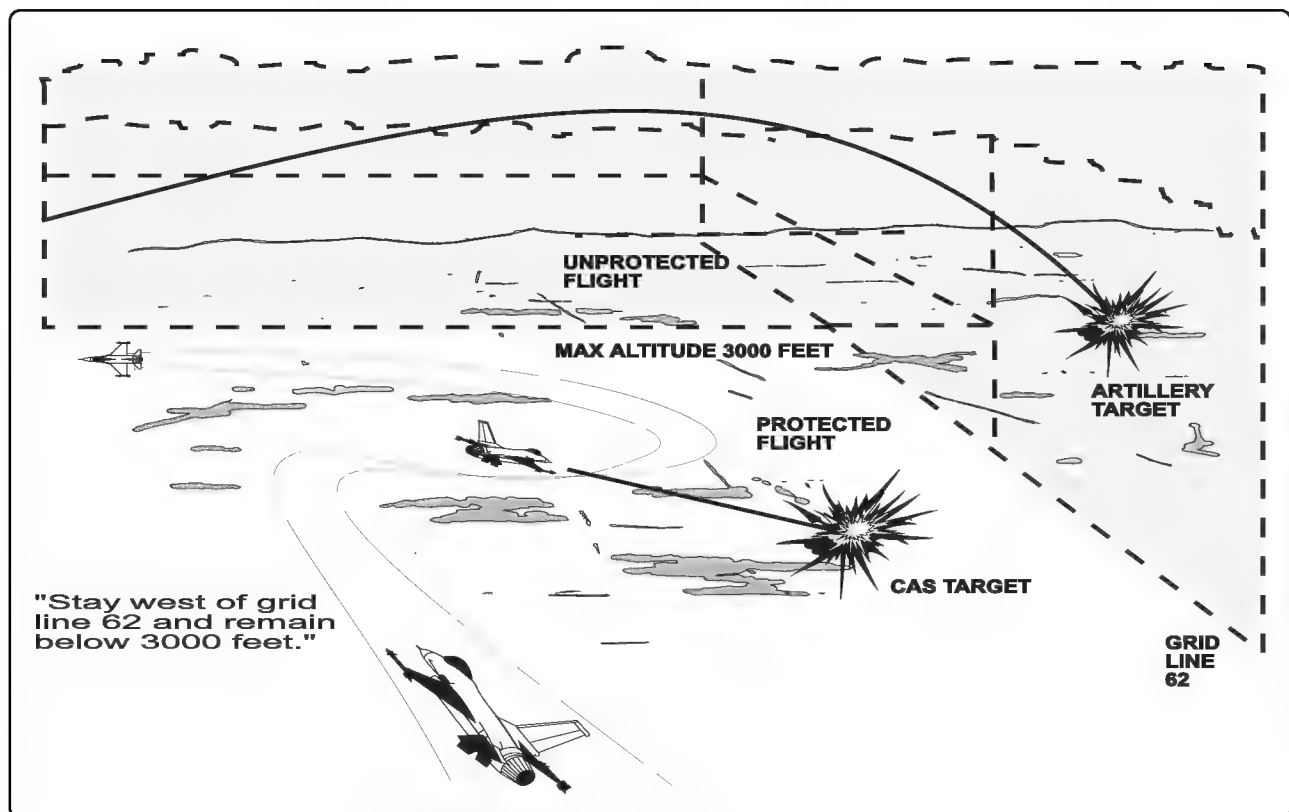


Figure III-4. Combination of Lateral/Geographic and Altitude Separation

b. Check-in and Briefing. JAAT participants check-in with the mission commander in accordance with CAS check-in briefing (Appendix F). The standard 9-line CAS brief (Appendix F) is the most effective means of providing ACM information and will be used whenever possible. For detailed discussion, refer to Joint Publication 3-09.3.

c. Firepower Timing Options. The three fire power timing options, simultaneous, sequential, and random are used to mass and deconflict fires. Employ these timing options using the attack methods described later in the chapter.

(1) **Simultaneous** - all elements attack at the same time.

(a) Advantages of simultaneous timing option:

- Masses fires.

- Maximizes shock effect.
- Complicates enemy ADA targeting scheme.
- Unpredictable.

(b) Disadvantages of simultaneous timing option:

- Complicates target array sorting and direct fire planning.
- Simultaneous weapons impacts can interfere with one another.

(2) **Sequential** - all elements attack in a predetermined sequence.

(a) Advantages of sequential timing option:

- Target area marked for subsequent attackers.

- Continuous pressure on target over time allows attackers to reposition while other attackers shoot.

- Less interference from weapons effects for subsequent shooters.

- Ensures that individual targets are not double-targeted.

- Preference for multiple flights of fixed-wing.

(b) Disadvantages of sequential timing option:

- Enemy air defenses can target all players.

- Takes longer, reduces shock effect, could provide opportunities to enemy.

(3) **Random** - all elements attack at will.

(a) Advantages of random timing option:

- Easiest on pilots-no timing required.

- Reduced C2 requirements.

- Unpredictable.

(b) Disadvantages of random timing option:

- Requires aircraft/weapons deconfliction.

- No guarantees for effects, possible loss of pressure on enemy.

- Can complicate fire support plan.

d. Attack Methods. The attack methods describe control techniques for attacking

targets within an objective area. Methods may apply to the joint attack as a whole and again within each attacking flight or units' individual plan of attack. The two methods, Combined and Sectored, are described and illustrated in Figures III-5 and III-6.

(1) Combined Method. The avenue to the target is shared airspace. During this attack, all J AAT members will fly in the same area. The mission commander will reference VIPER's 60-second call, visually acquire the F-16, and direct the attack helicopters to engage. The intent, in this case, is for all elements to attack simultaneously. VIPER flight has been directed to attack the northern half of the specified target area. After attacking, VIPER has been directed to clear the target area. This may imply a follow-on artillery barrage or simply reflect the ground commander's scheme of maneuver.

(2) Sectored Method. The avenue to the target is sectored (using acknowledged sectors). During this attack, the A-10 flight will maneuver exclusively west of a north-south line drawn through the target area (the road). The mission commander has directed the A-10 flight to attack at a specified TOT. The timing coordination call ("60 seconds" in this example) is requested in order to update the attack plan timing. Pilots must still deconflict weapons fans to preclude friendly casualties. While ensuring weapons or weapons effects do not cross an established sector line, a rule of thumb commonly employed is to never fire more than 30 degrees towards or into the other sector.

(3) Coordination between the type of attack and the timing option is vital. Table III-1, Coordinated Attack Types, shows the relationship between the two.

(4) Targeting Methods. Two examples of targeting methods are TRP and target array (Figure III-7).

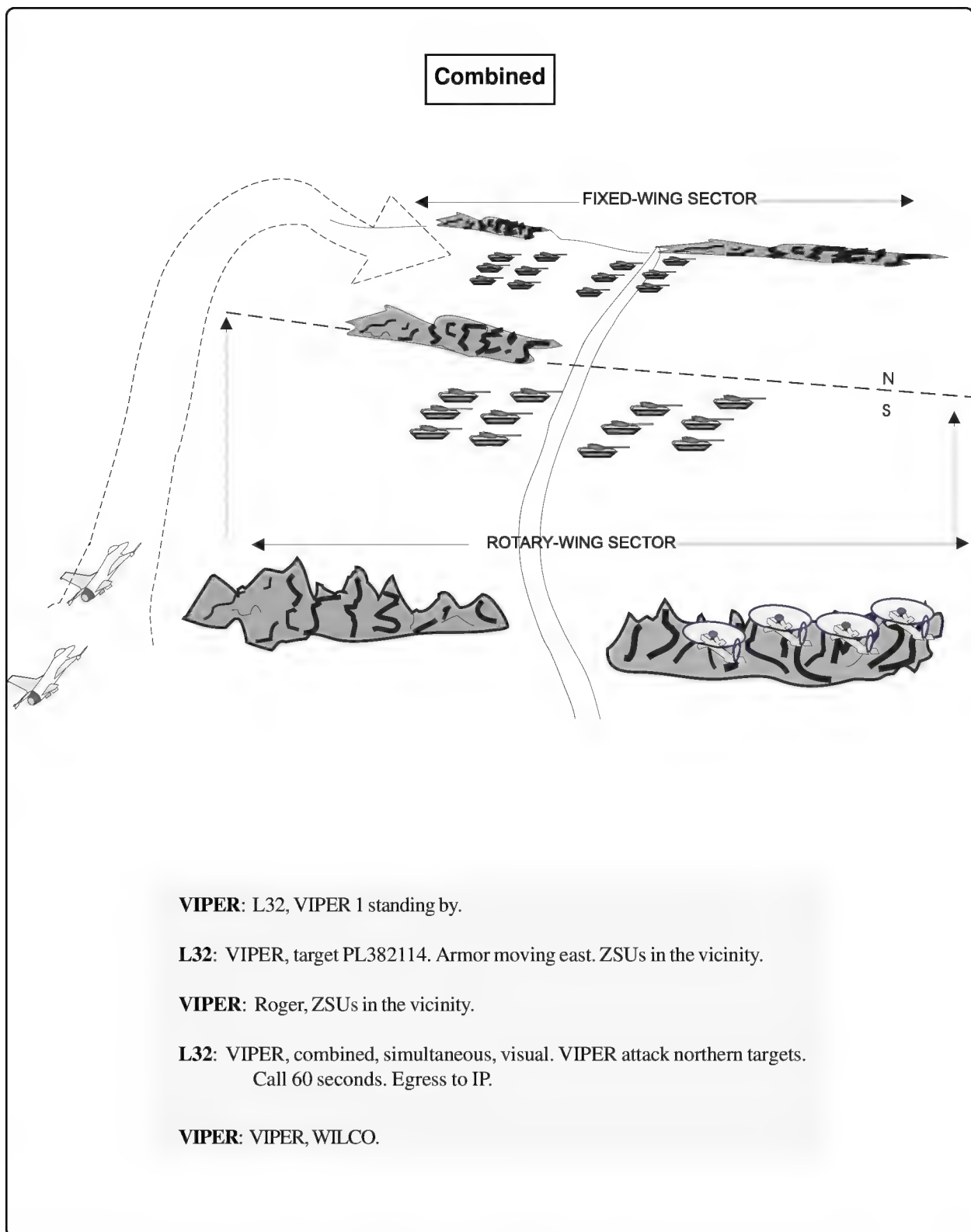


Figure III-5. Example of Combined Attack

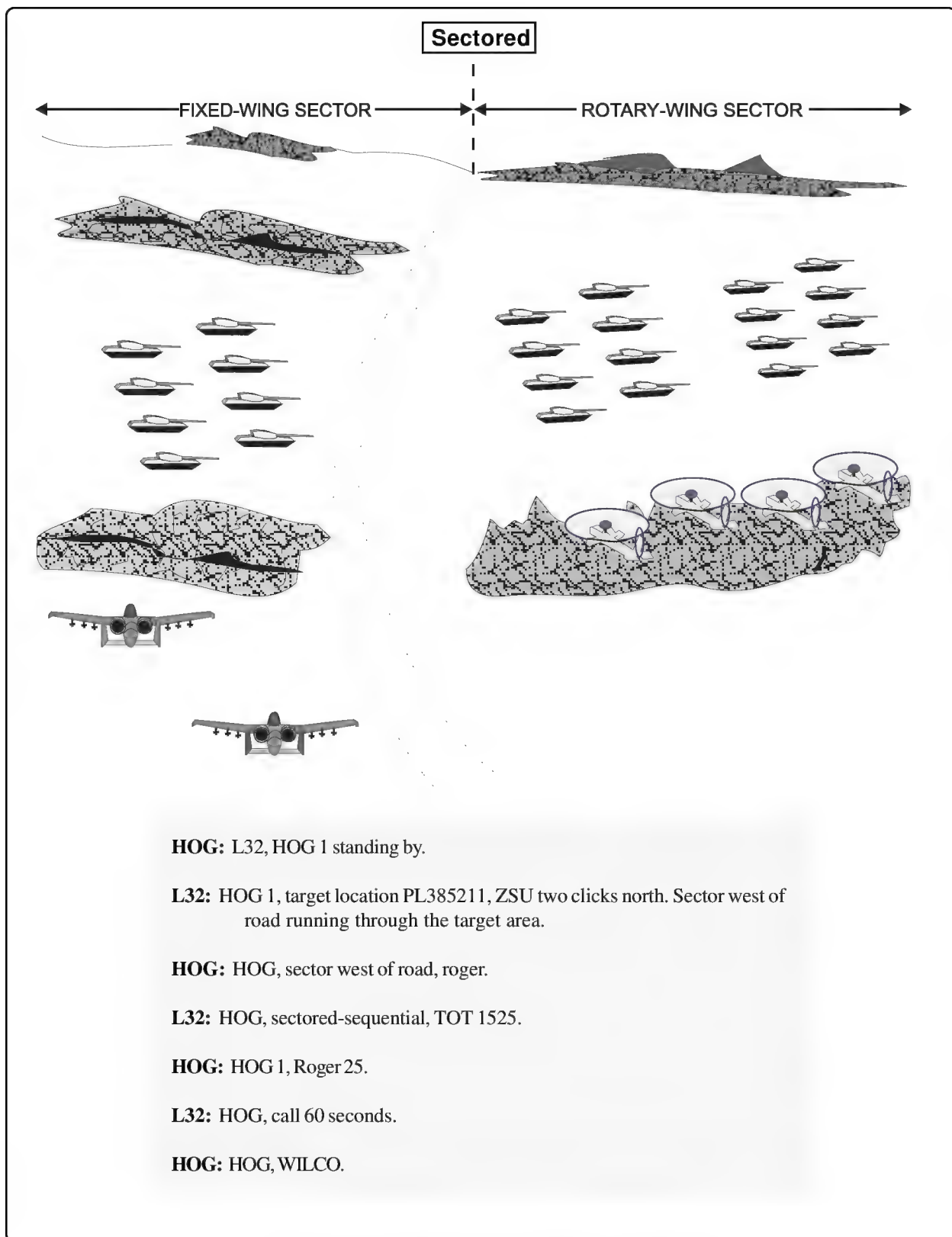


Figure III- 6. Example of a Sectored Attack

Table III-1. Coordinated Attack Types

Type of Attack	Simultaneous	Sequential	Random
COMBINED same avenue of attack	Visual or Hack (visual spacing or TTT separation)	Visual or TTT (visual spacing or TTT separation)	NOT NORMALLY USED for low altitude Free flow*
SECTORED acknowledged sector	Visual or Hack (visual spacing or TTT separation)	Visual or TTT (visual spacing or TTT separation)	

* Must ensure strafe fan/bomb and missile fragmentation deconfliction.

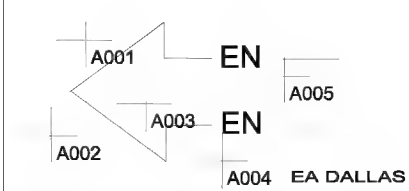
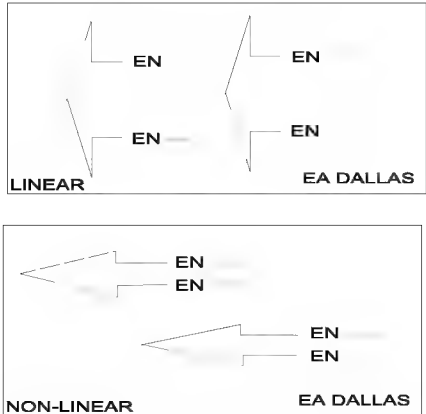
<p>Target Reference Point</p> <p>An easily recognizable point on the ground (either natural or man-made) used for identifying enemy targets or controlling fires. Target reference points are designated by using the standard target symbol, a target number, and target reference point letter.</p>	
<p>Target Arrays</p> <p>An enemy-oriented method of engagement where the focus and distribution of fires are determined by the enemy's formations or location. Target array are frontal (linear) and depth (nonlinear) and can be used to direct and shift fires quickly.</p>	

Figure III-7. Examples of Targeting Methods

(5) Shifting Targets. When shifting targets, provide a cardinal heading and distance. Example: "From previous spot, north, 1200 meters."

e. Disengagement. Consideration must be given to the disengagement phase of the operation. These considerations should include—

(1) Covering Fires. Fixed- and rotary-wing aircraft may provide suppressive fires and SEAD as the other elements egress. Artillery (cannon, MLRS, and ATACMS, if authorized) can also provide suppressive and SEAD fires. EW assets also may provide SEAD with antiradiation missiles or electronic attack.

(2) Route of Egress. Due to the flexible nature of operations, planned egress routes might not be available to all JAAT participants. Consideration must be given to coordinating new egress routes. (For example, fixed-wing aircraft might be tasked to provide reconnaissance of a hasty rotary-wing egress route.)

(3) Battle Damage Assessment. The mission commander has overall responsibility for collecting and disseminating BDA reports. The optimum method of BDA collection is to record the target area. Reports from all JAAT participants should be passed BDA as soon as possible in the INFLTREP format described in Joint Publication 3-09.3.

2. Risk Management

a. Risk management consists of identifying hazards and implementing controls during planning, preparation, and execution. During the execution phase, all participants in the JAAT focus primarily on implementation of controls. However, as additional hazards are identified during the execution, participants must implement additional controls.

(1) Hazards to consider include—

- (a) Enemy forces/threats.
- (b) Weapons release parameters/dangers.
- (c) Surface danger zones.
- (d) Laser operations.
- (e) Environmental factors.
- (f) Friendly unit location/situational awareness.
- (g) Human factors.
- (h) Battlefield obscuration/clutter.
- (i) Terminology.

(2) Control measures used to mitigate risk may include—

- (a) Airspace coordination measures.
- (b) Flight techniques tactics.
- (c) Use of personnel specifically trained and experienced in JAAT operations.
- (d) Lethal and nonlethal SEAD.
- (e) FSCM.
- (f) Suppressive fires.
- (g) Positive control.
- (i) Reasonable assurance/indirect control. Minimum criteria include—

- Adequate situational awareness.
- Known location of friendly elements.
- Positive hostile identification.
- Minimum separation for munitions employment (fragmentation deconfliction).

(j) Communications.

(k) Friendly combat identification (identification, friend or foe (IFF), IR markings, lights, etc.).

(m) Authentication.

3. Night Considerations

a. Tactics procedures for night employment of the J AAT remain the same as for day operations. However, techniques required to accomplish night J AAT operations tactics require a more deliberate tempo and strict adherence to these basic procedures. To ensure that all participants maintain situational awareness. Joint Publication 3-09.3 and unit/aircraft specific tactics manuals provide detailed information on conducting night operations. The following are some considerations when conducting night operations:

(1) Visual Descriptions. Perspective and target resolution vary based on aircraft systems. The aviation mission commander must provide a detailed description of the objective area to ensure that all participants, regardless of perspective or available sensors, have a clear picture of the objective area. Night sensor/night vision goggles (NVG) used by all participants greatly increase the capability and effectiveness of the J AAT; however, certain limitations exist. A terrain feature that is visible by a NVG/forward-infrared looking radar (FLIR) equipped rotary-wing aircraft at 50 feet may not be visible or recognizable by an NVG equipped pilot or for a FLIR equipped aircraft at 20,000 feet.

(2) C2. Night positive control is more difficult as controllers probably cannot observe both target and attacking aircraft. Friendly and threat situational awareness is necessary.

(a) Friendly Location. Aircraft lighting, thermal combat identification, ground unit identification, and location descriptions all aid in situational awareness.

(b) Target Marking. IR illumination, offset illumination, IR pointers and illuminators, indirect fires, direct fires, laser, and grid coordinates are all techniques for marking targets. Consideration must be made for the marker effects on all participants.

(3) Control Measures. Figure III-8 depicts example measures that will assist J AAT participants in controlling their fires. Other factors include—

- (a) Attack heading.
- (b) Weapons selection for pass.
- (c) Ingress and release altitudes.
- (d) Dive angle.
- (e) Distance from target.

4. Conclusion

J AAT operations involve the participation of different force components with varying operating procedures; they are by nature inherently complex and high risk operations. Therefore, execution procedures must be as simple as possible and lie within the capabilities and understanding of the players involved. This chapter assists the J AAT commander, mission commander, and support personnel identify areas of consideration for preplanned or immediate J AAT execution. This chapter is not definitive but does contain procedures proven by exercise and combat experience that can reduce the overall risk to the forces involved.

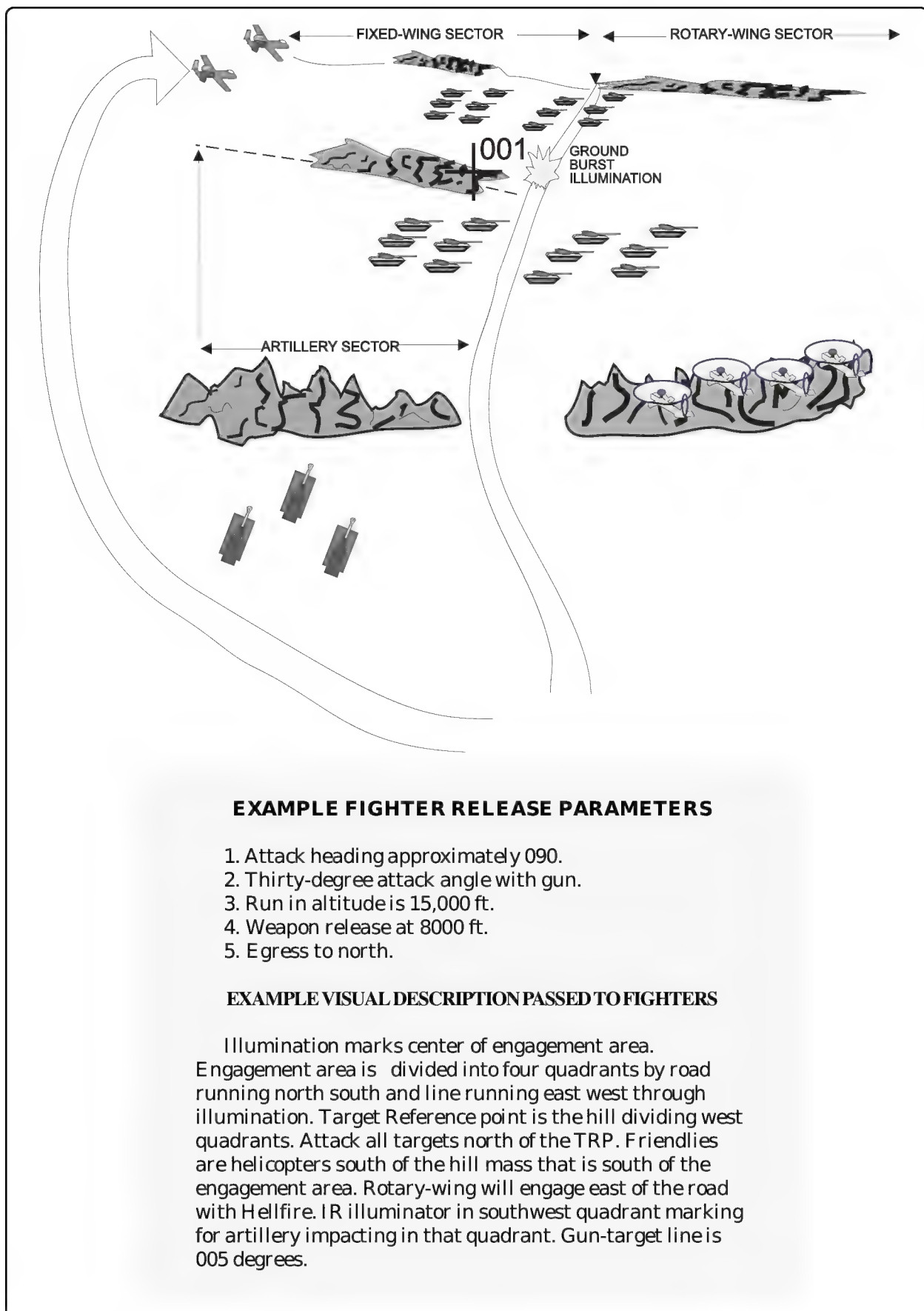


Figure III-8. Night J AAT and Associated Control Measures

Appendix A

LASER OPERATIONS

1. Background

Modern rotary-wing laser systems greatly enhance the effectiveness of the J AAT by offering increased mobility, accuracy, and lethality. Airborne target lasing capabilities coupled with laser spot tracking equipment provide for greater efficiency, integration, and distribution of weapons effects. Because of the variety of laser systems that can be employed during a J AAT operation, laser techniques and procedures, along with specific laser codes, must be coordinated by all J AAT elements to ensure successful operations. The J AAT laser briefing and information can be found in Appendix F. Laser code and laser-to-target line information is in line 7 of the 9-line brief.

J AAT procedures have been developed and successfully tested using Apache laser designators with the laser spot tracking equipment on AV-8 Harriers, F/A-18 Hornets, and A-10 Thunderbolt II. The scenario and descriptions of J AAT operations using laser operations cite the A/AO-10 for illustrative purposes only.

2. Operations

a. Laser Coordination. J-Laser standard calls are made on the J AAT common frequency.

b. Laser Codes. Airborne laser spot trackers for target acquisition accept four digit codes; ground systems accept only three digit laser codes. Therefore aircrews must place a "1" at the first digit of the laser code.

c. Terminal controller requirements. The terminal controller must ensure the

following events occur for an effective J AAT:

(1) Include laser code and laser target line (LTL) on line 7 of the 9-line brief.

(2) Aircraft avoid the 20 degree safety zone (10 degrees either side of the LTL for aircraft run-ins).

(3) Brief pilot if possible.

(4) Plan early and get the forward observer (FO)/FIST ready for mission.

(a) Laser code: ensure code in laser target designator (LTD) matches code that pilot passed.

(b) Actual LTL is no more than 5 degrees off briefed LTL.

(c) Explain that you are in control and that the LTD is operated at YOUR command.

(d) Ensure communications are in place—the simpler the better.

(e) Ensure appropriate safety zone is established around laser designators and friendlies are not overflown during weapons employment.

d. Radio Calls. The required radio calls for laser operations appear below. See Table A-1 for example.

Departing IP. This is a situation awareness call that informs all in the J AAT that the tactical air (TACAIR)/fixed-wing flight has departed the IP and is in bound to the target.

Timing Coordination and Type Weapon Call. The timing coordination call notifies the mission commander that the fixed-wing flight is inbound and states the approximate amount of time away from attacking in the immediate target area. It also alerts the Army asset as to what type of weapons (for example, missiles, guns) will be used. Normally 60 seconds gives the laser designator time to complete the present engagement, acquire a new target, and prepare to lase it.

10 Seconds. Directive to terminal controller to standby for laser on call in approximately 10 seconds. (The laser should be turned on in 10 seconds even if the laser on call is not heard.)

Laser On. Directive to start laser designation. (Normal laser designation time is 20 seconds maximum. The aircrew may request a longer laser on time by saying laser on and time [for example, "laser on, 30 seconds."])

Spot. Acquisition of laser designation.

Rifle. AGM-65 MAVERICK launch. (Advisory call indicates that Maverick missile is inbound.)

Shift. Directive to shift laser illumination. (Once the lead aircraft engages the target, a shift call can be made

to shift the laser to the next target. The laser must remain on during the shift to maintain a laser lock on. If the laser is turned off, the laser spot tracking equipment will revert to a search mode. Depending on the search mode, it could take 10 to 20 seconds to reacquire the laser energy, leading to unacceptable exposure times and aborted attacks. **[Note: When the AH-64 has the next target acquired he calls "Set."]**)

Terminate. Stop laser illumination of a target. This call indicates laser no longer needed. Careful planning must be done when fixed-wing are attacking in line or wedge formations to ensure that the lead aircraft does not terminate the laser before the wingman's lock on. When in trail, each aircraft may want to make separate laser on and termination calls, depending on their separation. Minimizing the time a laser is on is important in a laser countermeasure environment and when employing battery operated laser designators.

e. The laser operator will turn the laser off—

(1) When "terminate" call is heard.

(2) When the weapon hits the target.

(3) After 20 seconds (or longer if requested).

Table A-1. Laser Operations Example Radio Calls

A-10:	"HOG 1, departing IP"
AH-64:	"Apache 1, roger"
A-10:	"Hog 1, 60 seconds Maverick"
A-10:	"Hog 1, 10 seconds"
A-10:	"Hog 1, laser on"
AH-64:	"Apache 1, laser on"
A-10:	"Hog 1, spot"
A-10:	"Hog 1, rifle"
A-10:	"Hog 2, shift, gun"
AH-64:	"Apache 1, shift.....set"
A-10:	"HOG 2, spot"
A-10:	"HOG 2, terminate"

f. Figures A-1 and A-2 depict laser designation acquisition areas and safety zones. These are generic parameters that should suffice in most laser designator employment circumstances. Should more specific or restrictive laser designator acquisition and safety area information exist for a particular system, those

parameters will take precedence and should be coordinated, disseminated, and used. This depiction conforms to the Joint Warfighting Center laser safety issues message regarding a recommended change to the J-Laser designator safety zone (R081957ZJ anuary 1996). For more details/ discussion see Joint Publication 3-09.1.

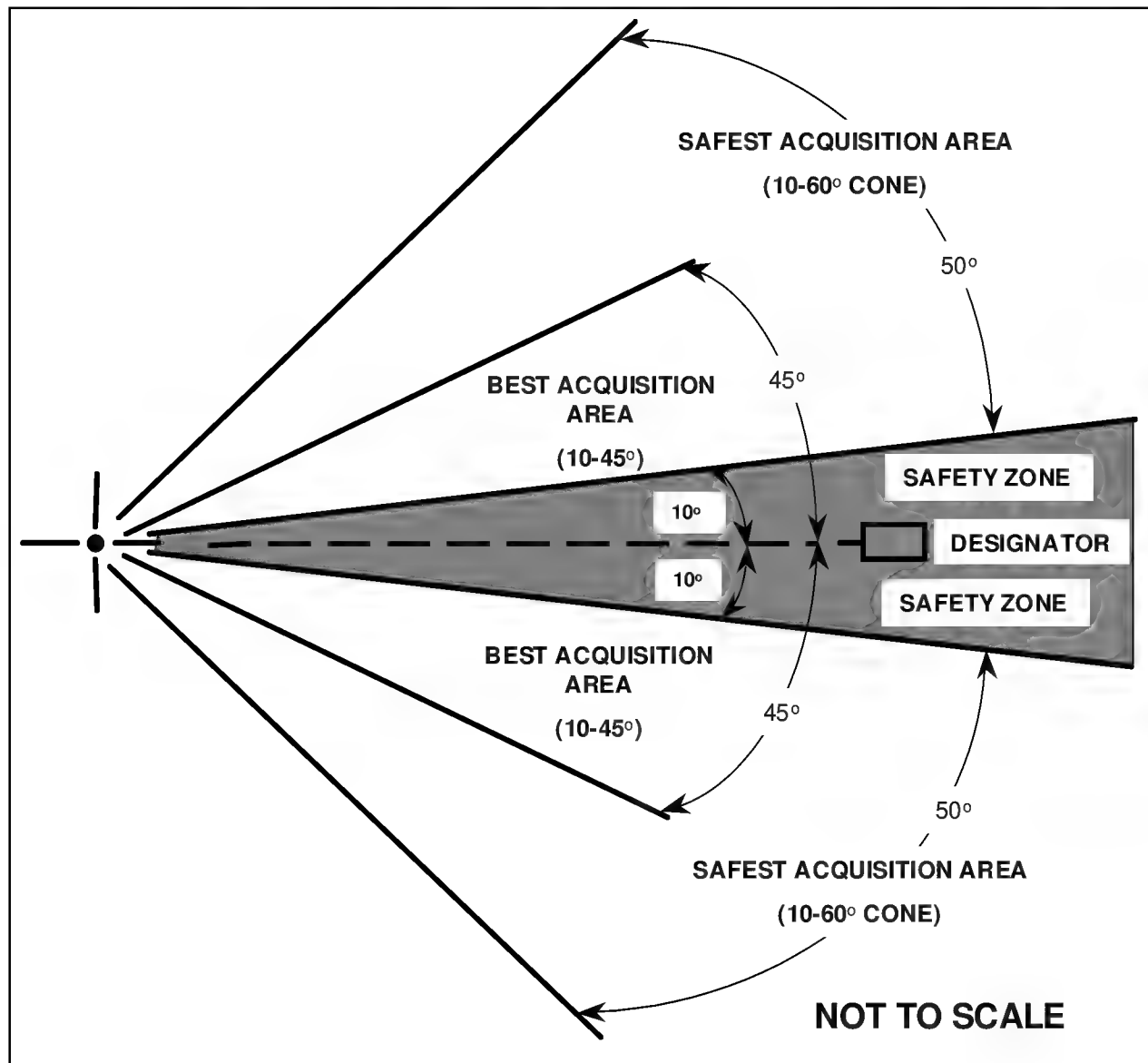


Figure A-1. Laser Designation Zones (2-Dimensional)

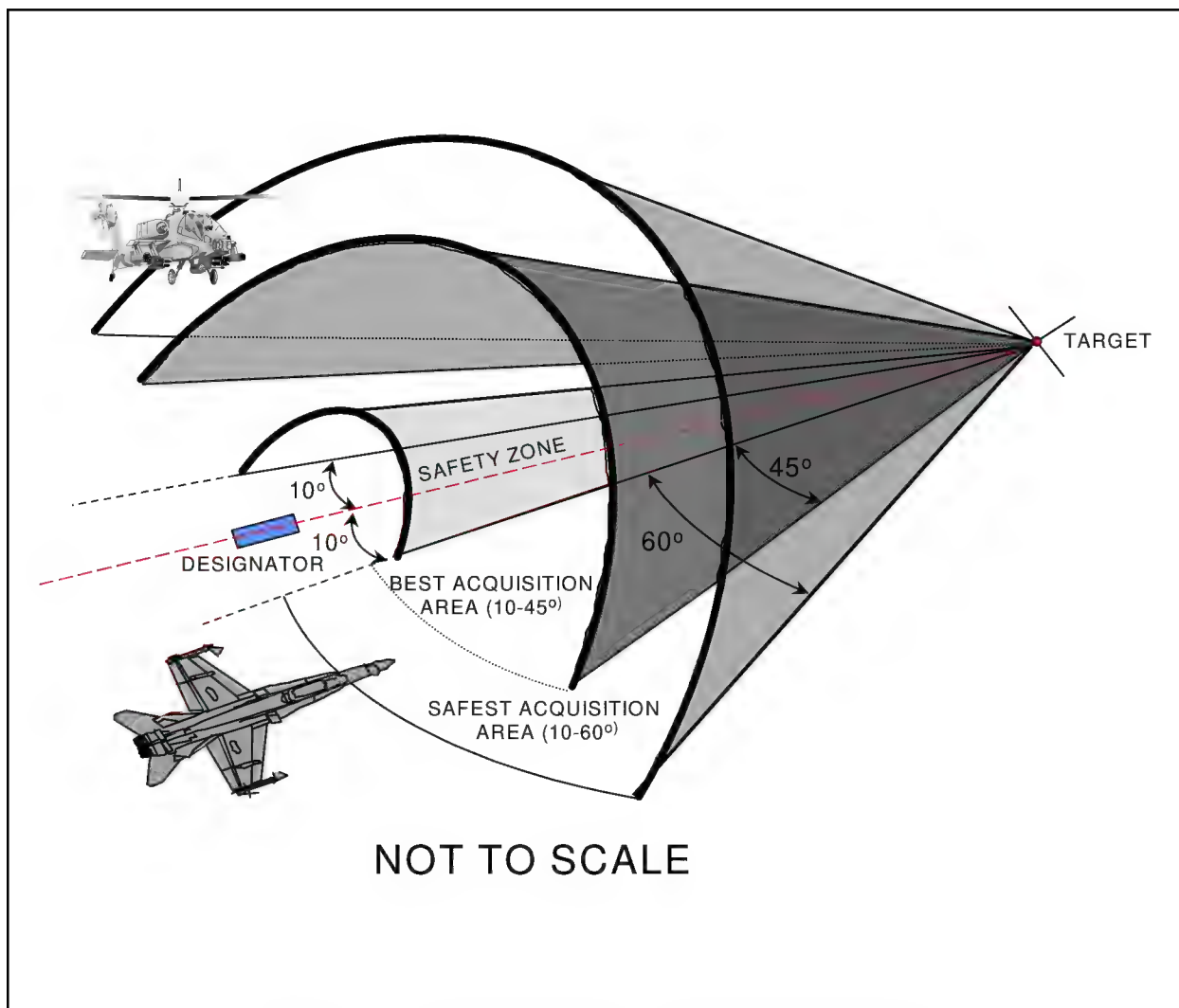


Figure A-2. Laser Designation Zones (3-Dimensional)

Appendix B

AIRCRAFT CAPABILITIES

Table B-1. Fixed-Wing Aircraft Weapons and Capabilities

Aircraft M/D/S	Using Service	Ordnance	Laser Capability		Marking Capability	Beacon Capability	Other Systems
			LST	LTD			
AV-8B Harrier II	USMC	LGBs* AGM-65 Maverick GP bombs CBUs Napalm Aerial mines 2.75" rockets 5.0" rockets LUU-2 flares 25mm cannon AGM-122 Sidearm	Yes	No	rockets	None	TV NVG GPS NFLIR
AV-8B Harrier II (APG-GS- Radar) "II Plus"	USMC	as above	No	No	rockets	None	NVG FLIR Radar GPS
A/OA-10A	USAF	LGB* AGM-65 Maverick GP bombs CBUs Aerial mines 2.75" rockets LUU-1/-2 flares LUU-5/-6 flares 30mm cannon	Yes	No	WP rockets 30mm HEI LUU-1/2/5/6 M257/278RX	None	NVG
AC-130H	USAF (SOF)	105mm howitzer 40mm cannon 20mm cannon	No	Yes Note 1	GLINT 105mm WP 105mm HE 40mm MISCH LTD (1688 only)	PPN-19 SST-181 SSB PLS	FLIR LLTV Radar GPS
AC-130U	USAF SOF	105mm howitzer 40mm cannon 25mm cannon	No	Yes	GLINT 105mm WP 105mm HE 40mm MISCH codeable LTD	PPN-19 SST-181	FLIR LLTV Radar GPS
B-1B	USAF	GP bombs CBUs	No	No	None	PPN-19	Radar
B-52H	USAF	AGM-142 Have Nap GP bombs CBUs Aerial mines LGB	No	No	None	PPN-19 PPN-20	FLIR LLTV Radar NVG GPS

Table B-1. Fixed-Wing Aircraft Weapons and Capabilities (continued)

Aircraft M/D/S	Using Service	Ordnance	Laser Capability		Marking Capability	Beacon Capability	Other Systems
			LST	LTD			
F-14 (non-LANTIRN)	USN	LGBs* GP bombs 20mm cannon CBUs Aerial mines LUU-2 flares	No	No		None	NVG TARPS# TCS## Link 16 (F14D)
F-14 (LANTIRN)	USN	LGBs GP bombs 20mm cannon CBUs Aerial mines LUU-2 flares	No	Yes	Laser	None	NVG FLIR TARPS# TCS## Link 16 (F14D)
F-15E	USAF	LGBs GP bombs AGM-65 Maverick CBUs 20mm cannon	No	Yes	Laser	PPN-19 PPN-20	FLIR Radar
F-16 (less LANTIRN)	USAF	LGBs* AGM-65 Maverick GP bombs CBUs 20mm cannon	No	No	WP rockets	PPN-19 PPN-20	Radar NVG GPS**
F-16C/D (with LANTIRN)	USAF	LGBs AGM-65 Maverick GP bombs CBUs 20mm cannon	No	Yes	Laser WP rockets	PPN-19 PPN-20	FLIR/TGP GPS NVG Radar
F/A-18	USN (A/C) USMC (A/C/D)	LGBs AGM-65 Maverick AGM-62 Walleye AGM-84 SLAM AGM-88 HARM GP bombs CBUs Aerial mines 2.75" rockets 5.0" rockets LUU-2 flares 20mm cannon	Yes	Yes	Laser WP rockets HE rockets	None	FLIR GPS NVG Radar
S-3B	USN	GP bombs CBUs 2.75" rockets 5.0" rockets Aerial mines LUU-2 flares	No	No	WP rockets	None	FLIR Radar

LST: Laser Spot Tracker. LTD: Laser Target Designator.

Note 1: The AC-130H can only designate laser code 1688.

*Though these aircraft can carry and release LGBs, they require off-board designation for terminal guidance.

**GPS on some aircraft (Blocks 40/41; 50/52)

#Tactical Air Reconnaissance Pod System-Digital format with real time data link

##TCS-Television Camera System-Magnified Slewable/Recordable Video Camera

Table B-2. Rotary-Wing Aircraft Weapons and Capabilities

Aircraft M/D/S	Service	Ordnance	Laser Capability		Marking Capability	Other Systems
			LST	LTD		
UH-1N	USMC	7.62 MG .50 cal MG 2.75" rockets	No	No	Rockets	LRF NVG FLIR GPS
AH-1F	USA	BGM-71 TOW 2.75" rockets 20mm cannon	No	No	Rockets	NVG
AH-1W ¹	USMC	BGM-71 TOW AGM-114 Hellfire 5" rockets 2.75" rockets 20mm cannon LUU-2 flares AGM-122 Sidearm	No Yes		Rockets Laser	FLIR 50X DVO 13X TVC 34X NVG GPS
AH-64 A ²	USA	AGM-114 Hellfire 2.75" rockets 30mm cannon	Yes	Yes Note 1	Laser Rockets	FLIR 39.8x NVG DTV 127x
AH-64D (including Longbow)	USA	AGM-114L Hellfire 2.75" rockets 30mm cannon	Yes	Yes Note 1	Laser Rockets	FLIR 39.8x NVG DTV 127x Radar (air and gnd tgt modes) IDM GPS
OH-58D (Kiowa Warrior)	USA	AGM-114 Hellfire 2.75" rockets .50 cal MG	Yes	Yes	Laser Rockets	FLIR 66 2/3x TVS 50x NVG

Note¹ The AH-1W can designate codes 1111-1788.

"IDM" = Improved Data Modem

Note² The AH-64 helicopters can designate laser codes 1111-1688.

Table B-3. Rotary-Wing Weapons Capabilities

Weapon	Effective Max Range (m)
2.75RX, 10-lb	3000
2.75RX, 17-lb	4000
2.75 MK 66/M 151 22.95-lb ¹	6900
7.62 mm minigun	1100
.50 cal machinegun	1000
20-mm cannon	1700
30-mm cannon ²	1500-1700
TOW	3750
Hellfire	8000
5.00RX ¹	7200
¹ USMC only	
² USA only	

Appendix C

INDIRECT FIRE SUPPORT WEAPON CAPABILITIES

Table C-1. FA Capabilities

105mm Weapons and Ammo	Basic Range (m)	Extended Range (m)	DPICM Range (m)	RAP Range (m)	Sustainment Rate (RPM)
M102	11,400	N/A	10,500	15,300	3
Applicable Ammo	HE, WP, ILLUM, APICM, HC SMK		DPICM (M916) FY 99*	RAP (M548)	
M119A1	11,500	14,000	14,100	19,500	3
Applicable Ammo	HE, WP, ILLUM, HC SMK, APICM	HE (M760)	DPICM (M915) FY 99*	RAP (M913)	
*Expected year in inventory					
155mm Weapons and Ammo	Basic Range (m)	DPICM Range (m)	BBDPICM Range (m)	RAP Range (m)	Sustainment Rate (RPM)
M109A5/A6	18,200	17,900	28,100	30,000	1
Applicable Ammo	HE, WP, ILLUM, HC SMK, APICM	DPICM, M825 SMK, FASCAM	BBDPICM (M864)	RAP (M549A1)	
M198	18,300	18,000	28,200	30,100	2
Applicable Ammo	HE, WP, ILLUM, HC SMK, APICM	DPICM, M825 SMK, FASCAM	BBDPICM (M864)	RAP (M549A1)	
Copperhead range for M109s and the M198 is 16,000 meters					
M270 Launcher	Munition	Range (m)		Payload	
MLRS	M26	10,000	32,000	DPICM	
	ER MLRS FY 99*	13,000	45,000	DPICM	
ATACMS	M39	25,000	165,000	APAM	
	BLK 1A FY 98*	70,000	300,000	APAM	
	BLK 2 FY 01*	35,000	140,000	BAT	
	BLK 2A FY 04*	100,000	300,000	BAT2	
*Expected year in inventory					
For planning purposes danger close is considered 2000 meters for MLRS (rocket) and ATACMS (missile) fires, 600 meters from friendly troops for mortar and artillery fires.					

Table C-2. Mortar Capabilities

Gun/MTR	Range (m)		Rate of Fire (RPM)		Ammo	Fuses
	Max	Min	Max	Min		
60 mm	3500	50	30	20	HE, WP, ILLUM	MULTI-OPTION
81 mm	5800	70	30	15	HE, WP ILLUM	PD, VT
107 mm	5650	920	18	3	HE, WP, ILLUM, CHEM	VT, TI, PD
120 mm	7200	180	12	3	HE, WP, ILLUM	VT, TI PD

Table C-3. Naval Surface Fire Support

Weapon	Max Range (m) Full/Reduced Charge	Rate of Fire Per Tube (Max/Sust)	Ammo	Fuses
5 inch/38	15,900/8100	20/15	HE, HC ILLUM, WP RAP	Q/MT/ CVT/VT
5 inch/54	23,127/12,200	20/16 MK 45 32/30 MK 42	HE, HC ILLUM, WP RAP	Q/MT/ CVT/VT/ DEL

Appendix D

TRAINING OPTIONS AND BRIEFING GUIDES

1. Background

An optimum J AAT training program should employ all elements of the team. Training should be guided by the concept that each element of the team retains its own system of command and control and executes according to proven individual doctrine and tactics. The emphasis in training should be to develop procedures that will maximize the effectiveness and survivability of the team and provide positive integration into joint service operations. Team members should achieve unit-prescribed levels of proficiency before engaging in J AAT training. This appendix contains guidelines for establishing training for the members as a team and guides for briefing and debriefing.

2. Preparation for Training

a. Before J AAT training exercises, the participants should be introduced to the J AAT concept, coordination requirements, and team member responsibilities. Everyone must receive instruction on the equipment, roles, and tactics of the other members of the J AAT.

b. Participants should also be briefed on the conduct of the training and all safety requirements. Special restrictions are applicable to peacetime training involving live-fire operations. Air Force participants in live-fire training should refer to ACCR 55-26 or the appropriate major command or theater regulation. When possible, participants in a J AAT exercise should attend each other's mission briefings before training. A list of items to help in preparing a J AAT training program is provided (Table D-1).

c. Sample training options. Unit commanders may use the following examples as a guide when conducting J AAT training.

These training options can be tailored to meet available assets.

(1) Option One. The first training option is coordination training for fixed-wing flights, rotary-wing units, and fire support element. Fixed-wing aircraft require military operating area (MOA) or restricted airspace to conduct training, operations/maneuvers. Face-to-face or telephonic briefings/debriefings are suggested to establish effective coordination between participants. Mutually agreed training objectives, scenarios, and safety standards must be briefed to all participants. Debriefings allow for feedback on training effectiveness.

(2) Option Two. Option two is a broader program that emphasizes J AAT planning, coordination, and employment. The TACP, aviation unit LNO, maneuver unit staff, and combat support elements develop and refine J AAT standard operating procedures. These include integration of fires, command and control, communications, target identification, and hand-off procedures. This option begins at the basic level and progresses into combined arms scenarios. Face-to-face coordination/debriefings and the use of an opposing force increase the training for all elements. Concurrent with this option, briefing teams comprised of J AAT members may host seminars for division, brigade, and battalion commanders and staff officers on J AAT employment and integration.

(3) Option Three. The third option integrates J AAT operations into exercises using wartime procedures and scenarios as much as possible. Emphasis should be on the involvement of participants not trained under the preceding options; that is, the tactical air control system and division and corps staffs. The full and proper employment of a J AAT should be a major exercise objective.

Table D-1. Planning and Execution Considerations

Prior to Mission

- Plan a rehearsal.
- Define the objectives and training goals.
- Review the fundamentals of J AAT operations.
- Discuss and develop the scenario. The scenario should be incorporated into the ground maneuver commander's field training exercise to maximize the training benefits for the combined arms team.
- Outline the training periods by participants, roles, and responsibilities.
- Discuss the training area restrictions, constraints, and limitations.
- Determine weather requirements. Fixed-wing normally requires 1500 foot ceiling and 3 miles visibility (check local requirements).
- Determine fixed-wing airspace requirements such as a MOA or restricted airspace.

Flight Operations

- Issue operations order/air tasking message.
- Conduct mission briefing for the J AAT (face-to-face or telephonic).
- Reconnoiter the battlespace.
- Rotary-wing attack elements move to holding area.
- Unit's TACP conducts own reconnaissance in an observation helicopter or receives requested information from the FAC(A).

Subsequent Missions

- Correct identified problems.
- Introduce new variables such as—
- • Absence of TACP/FAC(A).

- • Reattacks.
- • Rotating attack companies on station.
- • Communications jamming.
- • Integrate tactical radar threat generators.
- Discuss the capabilities, limitations, and tactics of the key elements in the J AAT.
- Discuss fundamentals of combined arms operations.
- Discuss operations with or without a TACP/FAC(A).
- Discuss enemy tactical doctrine.
- Discuss command and control procedures and J AAT communications nets.
- Discuss and resolve remaining administrative and logistical issues.
- Rotary-wing scouts pick up attack elements and move them to battle positions.
- The unit TACP calls for fixed-wing.
- Fixed-wing and rotary-wing unit attack targets on the battlespace.
- Conduct detailed debriefing by each element in the play, to include opposing forces.
- • Enemy air defense suppression.
- • Fixed-wing quick-turn operations.
- • Fixed-wing on station first.
- • Live fire.
- • Impromptu initial points.
- • Target attacks from multiple directions.
- • Use of progressively lower altitudes.

Sample J AAT mission briefing and debriefing guides are listed in Table D-2. While pri-

marily applicable to training, this briefing guide could be used to prepare for a combat mission.

Table D-2.J AAT Mass Briefing Guide

Briefing Guide

- Time hack.
- Introduce team members.
- General information.
- Ground war situation (S2/intelligence).
- Weather.
- Call signs.
- Frequencies, communications net. (All participants must monitor a common frequency).
- Appropriate takeoff times.
- Route of flight, altitude, time en route, and airspace control measures.
- Contact point.
- Authentication procedures.
- Map datum.
- Mission commander to TACP/FAC(A) (airborne briefing sequence).
- Target description.
- Target location.
- Indirect Fires (artillery/NSFS).
- Assets available.
- Positions.
- Ammunition.
- Planned fires.
- Communication nets and agencies.
- Fire support coordination measures (ACAs, FSCL, RFLs).
- Restrictions (ordnance, etc.).
- Type of marks.
- Friendly location.
- Request TOT. Sectors or timing used for coordination calls.
- Associated threats.
- Attack restrictions.
- Contact point briefing (TACP/FAC(A)) to flight lead briefing sequence (9 line).
- Initial point (IP).
- Heading (IP to target, magnetic).
- Distance (IP to target).
- Target/elevation (FT MSL).
- Target descriptions.
- Target location (lat/long or UTM or offsets or visual).
- Type Marks (WP, laser, etc.). Code (beacon, laser).
- Location of friendly forces.
- Egress.
- Remarks.
- Frequencies.
- Call signs.
- Threats.
- Abort codes.
- Restrictions.
- Other (sector, timing calls, TOTs, etc.).
- Mission commander to flight lead briefing sequence.
- Specific target description.
- Confirm target location.
- Confirm associated threat.
- Employment method.
- Attack restrictions.
- Final attack vectors (if applicable).
- Reattack information.
- Weapon information (detail as required).
- Rotary-wing.
- Fixed-wing.
- Ordnance fan deconfliction.

Table D-2. J AAT Mass Briefing Guide (Continued)

- Rotary-wing weapon employment tactics (distances normally expressed in meters).
 - Fixed-wing tactics (detail as required).
 - Attack formations.
 - Attack method.
 - Sectored.
 - Combined.
 - Firepower coordination.
 - Simultaneous.
 - Sequential.
 - Random.
 - Coordination procedures.
 - TACP/FAC(A).
 - AMC.
 - Fixed-wing radio procedures (detail as required).
 - Departing IP call.
 - Timing/laser coordination calls.
 - During simulated/actual attacks, call "RIFLE"/"GUNS."
 - Rotary-wing simulated attacks call weapons usage.
 - Reattack/regroup.
 - Coordination between/within flights.
 - Timing.
 - Coordination with TACP/FAC(A)/mission commander.
 - Coordination with rotary-wing attack elements.
 - Regroup areas.
 - Code words.
 - Egress to IP.
 - When to leave.
 - Formation.
 - Route considerations.
 - New target information.
 - Rules of engagement (ROE).
 - Altitude blocks. (Fixed-wing, rotary-wing, indirect fires)
 - Deconfliction during emergencies.
 - Using the term KNOCK IT OFF will terminate all attacks when situational awareness is lost or a flight path conflict arises. Fixed-wing pilots will climb immediately and maneuver as necessary to avoid a conflict.
 - Target run abort criteria/procedures.
 - Target engagements.
 - Threat engagements.
 - Mutual support.
 - Impact on the target area.
- Debriefing Guide**
- Objectives.
 - En route phase.
 - Rendezvous phase.
 - Employment phase.
 - Communications plan.
 - Attack plans.
 - Coordination requirements.
 - Overall effectiveness.
 - Lessons learned.

Appendix E

COMMUNICATIONS

1. Background

A J AAT communications net has no set configuration. The communications nets used depend upon the availability of different types of radios in the rotary-wing and TACAIR/fixed-wing aircraft and the specific tactical situation. **Note: Table E-1 provides a communications matrix for fixed- and rotary-wing elements. Reference Tables E-2 through E-7 for communications capabilities for all J AAT participants.**

2. Command Net

The mission commander uses the maneuver commander's command net to coordinate the J AAT with other maneuver units and to keep the maneuver commander informed on the situation in the battle area. Stations on this net include the maneuver commander, subordinate maneuver units, mission commander, TACP, and FSO. In some cases the maneuver commander may instruct the aviation liaison officer to maintain communications with the mission commander. In these instances, situation reports and instructions to and from the maneuver commander will pass through the liaison officer.

3. Strike Frequency

The mission commander uses the J AAT strike frequency to coordinate the J AAT.

Before executing the J AAT, all participants should check-in on strike frequency. The primary elements on this net will be the rotary-wing aircraft, the TACP, TAC(A), FAC(A), and fixed-wing aircraft. ABCCC, AWACS, and other supporting elements such as electronic warfare assets may also participate supporting deep operations. Have Quick should be used if available (**Note: Some services require preplanning for Have Quick use**). Adjustments based on enemy jamming, lack of aircraft radios, or lack of team members would have to be made on a case-by-case basis. All aircraft will monitor the assigned strike frequency. The J AAT communications matrix (Table E-1) should be referenced when preparing the J AAT communications plan.

4. Authentication

All J AAT communications should occur over secure radios. When this is not possible, authentication procedures between J AAT elements must occur. Because service authentication tables differ, the mission commander should coordinate authentication procedures between all J AAT participants. Additionally, mission commanders must consider joint communications and brevity codes. Multiservice Air-Air, Air-Surface, Surface-Air Brevity Codes, FM 90-38, MCRP 6-25B, NWP 6-02.1, AFTTP(I) 3-2.5 contains standard brevity words.

Table E-1. J AAT Communications Matrix

	Elements	Radio Preference	Command/Control	Priority Comm
Maneuver Command Net	Maneuver Commander Mission Commander FSO	FM (SINCGARS) FM Secure FM	Not Applicable	1. Maneuver Commander's Clearance 2. Intelligence/Spot Reports 3. BDA
	Avn LNO TACP			
Strike Frequency	CAS (Air Force) CAS (Navy/ USMC) Army Aviation J-SEAD	UHF (HQ II) UHF (Note 1-2)	AMC TACP ANGLICO FAC(A) TAC(A)	1. Final Clearance 2. Threat Calls 3. 9-Line Information 4. Remarks 5. BDA 6. Intelligence/Spot Reports
	CAS (Air Force) CAS (Navy / USMC) Army Aviation	VHF/FM VHF/UHF FM/VHF	AWACS E-2C ABCCC	1. Threats 2. Tactics 3. Targeting

Note 1: Have Quick II WODs can be found in the ITO/ATO spins.

Note 2: TODs can be received from CAS flight leads on initial check-in.

Table E-2. Ground Communication Equipment

Component	Radios	Frequency Band (Note 1)	Frequency Hopping	Secure Capable
US Army FIST	AN/PRC-119 AN/PRC-177 AN/VRC-12 AN/VRC-24	VHF-FM VHF-FM	SINCGARS No No No	KY-57
USAF TACP	AN/GRC-206 AN/GRC-206 AN/GRC-206 AN/GRC-206 AN/PRC-77 AN/PRC-119 AN/PRC-104 AN/PRC-113 AN/PRC-113	HF VHF-FM VHF-AM UHF VHF-FM VHF-FM HF VHF-AM UHF	No No No Have Quick II No SINCGARS No No Have Quick II	KY-65/99 KY-57 KY-57 KY-57 KY-57 KY-57 KY-65/99 KY-57 KY-57
USMC TACP	AN/PRC-77 AN/PRC-119 AN/PRC-104 AN/PRC-113 AN/PRC-113 AN/VRC-12	VHF-FM VHF-FM HF VHF-AM UHF VHF-FM	No SINCGARS No No Have Quick II No	KY-57 KY-57 KY-65/99 KY-57 KY-57 No
SOF SOTAC	AN/PRC-117D AN/PRC-117D AN/PRC-117D AN/PRC-126 LST-5 LST-5	VHF-FM VHF (Note 2) UHF (Note 3) VHF-FM UHF SATCOM	No No No No No	KY-57 KY-57 KY-57 KY-57 KY-57

Note 1: Frequency bands for ground radios are as follows:

HF: 2.000 to 29.999 MHz in 1 kHz increment.

VHF-FM: 29.950 to 75.950 MHz in 50 kHz increments.

VHF-AM: 116.000 to 149.975 MHz in 25 kHz increments.

UHF: 225.000 to 399.975 MHz in 25 kHz increments.

Note 2: AN/PRC-117D VHF-AM/FM frequency range is 116.000-173.995 MHz.

Note 3: AN/PRC-117D UHF-AM/FM frequency range is 225.000-419.995 MHz.

NOTICE: In an AOR, national and international regulations and agreements govern the specific frequency assignments. Before conducting operations, coordinate with host nation.

Table E-3. Rotary-Wing Communications Summary

Aircraft Type	Radios	Frequency Band (Note 1)	Frequency Hopping	Secure Capable
AH-1W	2-AN/ARC-182	(Note 2)	No	KY-58
AH-1W(CNU)	2-AN/ARC-210(V)	VHF-AM/FM UHF	Have Quick I/II SINCGARS	KY-58
UH-1N	2-AN/ARC-182	(Note 2)	No	KY-58
UH-1N (CDNU)	3-AN/ARC-210(V)	VHF-AM/FM UHF SATCOM	Have Quick I/II SINCGARS	KY-58
UH-60	1-AN/ARC-201	FM	SINCGARS	KY-58
	1-AN/ARC-201	FM	SINCGARS	KY-58
	1-AN/ARC-186	VHF-FM	No	No
	1-AN/ARC-164	UHF	Have Quick II	No
OH-58C (Note 4)	2-AN/ARC-201	VHF-FM	SINCGARS	KY-58
	1-AN/ARC-186	VHF-FM	No	No
	1-AN/ARC-164	UHF	Have Quick II	No
	or AN/ARC-116			No
OH-58D (Note 5)	2-AN/ARC-201	FM	SINCGARS	KY-58
	1-AN/ARC-186	VHF-FM	No	KY-58
	1-AN/ARC-164	UHF	Have Quick II	KY-58
	1-AN/ARC-199	HF	No	KY-75
AH-64	1-AN/ARC-201	FM	SINCGARS	KY-58
	1-AN/ARC-164	UHF	Have Quick II	No
	1-AN/ARC-186	VHF (Note 3)	No	No
<p>Note 1: Frequency bands are as follows: HF = 2.000 to 29.999 MHz in 1 kHz increments. VHF-FM = 29.950 to 87.975 MHz in 25 kHz increments. VHF-AM = 108.000 to 151.975 MHz in 25 kHz increments. UHF = 225.000 to 399.975 MHz in 25 kHz increments.</p> <p>Note 2: The AN/ARC-182 is a multiband radio that operates in any one of four bands: standard VHF-FM, VHF-AM, UHF, or 156.0-173.975 MHz VHF-FM. It can monitor only one band at a time.</p> <p>Note 3: The AN/ARC-186 operates either in the VHF-AM or VHF-FM band. Each radio can monitor only one band at a time.</p> <p>Note 4: Only one AN/ARC-201 is connected to the KY-58. The other one is unsecured.</p> <p>Note 5: The OH-58D has two KY-58s. One is dedicated to an AN/ARC-201. The other KY-58 is shared between the other three radios</p> <p>NOTICE: In an AOR, national and international regulations and agreements govern the specific frequency assignments. Before conducting operations, coordinate with host nation.</p>				

Table E-4. Fixed-Wing Aircraft Communication Summary

Aircraft Type	Radios	Frequency Band (Note 1)	Frequency Hopping	Secure Capable
AC-130	2-AN/ARC-164 1-AN/ARC-164 3-AN/ARC-186 2-AN/ARC-190	UHF SATCOM VHF (Note 3) HF	Have Quick II No No No	KY-58 KY-58 KY-58 KY-75
EA-6B	2-AN/ARC-159 1-AN/ARC-175 1-AN/ARC-105	UHF VHF HF	No No No	KY-58
AV-8B	2-AN/ARC-182	(Note 2)	No	KY-58
A/OA-10	1-AN/ARC-164 1-AN/ARC-186 1-AN/ARC-186	UHF VHF-FM VHF-AM	Have Quick II No No	KY-58 KY-58 No
B-1B	2-AN/ARC-164 1-AN/ARC-190	UHF or SATCOM HF	Have Quick II No	KY-58 No
B-52H	1-AN/ARC-164 1-AN/ARC-171 1-AN/ARC-190	UHF UHF or SATCOM HF	Have Quick II No No	KY-58 No No
F-14 (Note 5)	1-AN/ARC-182 1-AN/ARC-59	(Note 2) UHF	Have Quick II No	KY-58 KY-58
F-15E	2-AN/ARC-164	UHF	Have Quick II	KY-58
F-16	1-AN/ARC-164 1-AN/ARC-186	UHF VHF (Note 3)	Have Quick II No	KY-58
F/A-18 (Note 4 and 5)	2-AN/ARC-182 2-AN/ARC-210	(Note 2) VHF	No Have Quick II	KY-58 KY-58

Note 1: Frequency bands are as follows:

HF = 2.000 to 29.999 MHz in 1 kHz increments.

VHF-FM = 29.950 to 87.975 MHz in 25 kHz increments.

VHF-AM = 108.000 to 151.975 MHz in 25 kHz increments.

UHF = 225.000 to 399.975 MHz in 25 kHz increments.

Note 2: The AN/ARC-182 is a multiband radio that operates in any one of four bands: standard VHF-FM, VHF-AM, UHF, or 156.0-173.975 MHz VHF-FM. It can monitor only one band at a time.

Note 3: The AN/ARC-186 operates either in the VHF-AM or VHF-FM band. Each radio can monitor only one band at a time.

Note 4: F/A-18s are fitted with either two AN/ARC-182 radios or two AN/ARC-210 radios.

Note 5: LINK/TADIL capabilities are available for FA-18/F-14 aircraft

NOTICE: In an AOR, national and international regulations and agreements govern the specific frequency assignments. Before conducting operations, coordinate with host nation.

Table E-5. USMC Fire Support Request Nets

Net	Purpose	Net Control	Stations on Net	Freq
Artillery Conduct of Fire	FOs request and adjust artillery fire	DS artillery bn	DS arty bn, firing battery, arty LNO at bn, FOs, rein arty units	VHF
GCE Air Spot Net	Naval aviation observers	Artillery regt	NAO, arty bn, firing battery, FOs, FSCCs, GCE HQ	VHF
Tactical Air Request	To request immediate air support	TACC - afloat DASC - ashore	TACC, DASC, FSCCs, TACPs, airborne controllers, HDC, TADC	HF
Tactical Air Direction	Direction of aircraft in CAS missions by a terminal controller	TACC - afloat DASC - ashore	TACC, DASC, FSCCs, TACPs, airborne controllers, OAS aircraft	UHF/VHF aircraft dependent
NGF Ground Spot	Spot teams request and adjust NGF	NGLO at bn FSCC	Bn NGLO, NGF spot teams, DS ship, GS Ship as req'd	HF pri VHF alt
NGF Air Spot	NAOs request and adjust NGF	SACC - afloat TACC - afloat as req'd GCE FSCC ashore	SACC, TACC, FSCCs, DS&GS Ships, NAOs	UHF/VHF aircraft dependent
Bn Mortar	Mortar FOs request and adjust fires	Mortar platoon commander	Mortar platoon commander, mortar FOs, bn FSCC	VHF

Table E-6. Army Fire Support Request Nets

Net	Purpose	Net Control	Stations on Net	Freq
Mvr Bn Fire Support	Calls for fire from non-FA observers	Mvr bn FSE	Mvr bn FSE, mvr bn FSO, FOs, mvr bn mortar FDC, FIST HQ, any FDC, FSO, or COLTS as req'd, mvr bde FSO	FM
Mvr Bn Mortar FD	Tactical and technical fire direction and calls for fire to the mortar FDC	Mvr bn mortar FDC	Mvr bn FSE/FSO, mvr co FOs mvr bn mortar FDC, FIST HQ, COLT(S), any FSO or observer as req'd	FM
DS Bn Fire Direction	Tactical and technical fire direction and calls for fire to FA bn, btry, or plt FDCs	DS bn FDC	DS bn FDC, plt FDCs, FIST HQ, FOs, AN/TPQ-36 radar, COLT(S), bn FSE/FSO, mvr bde FSE/FSO, FA btry FDCs, FA plt FDCs	FM
NGF Ground Spot	Fire control teams request and adjust NGF	SALT at bn FSE	Company FCT, bn FSE & SALT, bde FSE & ANGLICO tm, div FSE & ANGLICO tm, DS ship, GS ship as req'd	HF pri VHF alt

Table E-7. Air Force Air Request Net

Net	Purpose	Net Control	Stations on Net	Freq
Air Force Air Request Net	TACP request immediate air support	ASOC	TACPs, ASOC, ALO, ABCCC	HF

Appendix F

BRIEFING INFORMATION

1. Background

This appendix provides standardized briefing formats for J AAT operations and typical scenarios illustrating radio calls.

2. Mission Commander to the TACP/ FAC(A)

Figure F-1 show the critical elements of

information the mission commander must pass to the TACP/FAC(A).

3. Fixed-Wing Flight Lead to TACP/ FAC(A)

Figure F-2 shows the fixed-wing flight lead checkin briefing format.

CRITICAL ELEMENTS
Target Description
Target Location (in 6-digit UTM's)
Type of mark (laser codes, indirect fires).
Friendly locations.
Requested TOT (1535 hours) or time to target (i.e., request support in 15 minutes-HACK)
Attack sectors or timing used for coordination calls.
Associated threats (type and location).
Attack restrictions.

Figure F-1. Mission Commander to TACP/FAC(A) Brief

CAS CHECK-IN BRIEFING	
Aircraft Transmits to Controller	
Aircraft: "	_____ this is _____"
	(Controller Call Sign) (Aircraft Call Sign)
Note: Authentication and appropriate response suggested here. The brief may be abbreviated for brevity or security ("as fragged" or "with exception").	
Identification/Mission Number: "	_____"
Number and Type of Aircraft: "	_____"
Position and Altitude: "	_____"
Ordnance: "	_____"
Play Time: "	_____"
Abort Code: "	_____ (If applicable)
*Remarks: "	_____ (NVG, LST, Special Mission Items)

*Optional Entry	

Figure F-2. Fixed-Wing Flight Lead to TACP/FAC(A) Check-In Briefing

4. TACP/FAC(A) to the Fixed-Wing Flight Lead

After initial contact between the flight lead and the TACP/FAC(A) has been established, the TACP/FAC(A) provides the following information to the fixed-wing flight lead (Figure F-3).

5. Mission Commander to Fixed-Wing Flight Lead

The fixed-wing flight lead establishes contact with the mission commander on the

J AAT common frequency. The mission commander verifies that the fixed-wing flight lead has received target information from the TACP/FAC(A). If the fixed-wing flight lead has not been briefed or has received an incomplete briefing, the mission commander should pass target information to the flight lead using the format in Figure F-3. Normally the mission commander briefs updates or changes to the situation followed by the J AAT attack plan. Example mission commander to fixed-wing flight lead briefing is shown in Figure F-4.

CAS BRIEFING FORMAT (9-LINE)	
(Omit data not required, do not transmit line numbers. Units of measure are standard unless otherwise specified. *denotes minimum essential in limited communications environment. BOLD denotes readback items when requested.)	
Terminal controller: “	_____ this is _____” (Aircraft Call Sign) (Terminal Controller)
*1. IP/BP: “	_____”
*2. Heading: “	_____” (Magnetic) (IP/BP to Target)
Offset: “	_____” (Left/Right)
*3. Distance: “	_____” (IP-to-Target in Nautical Miles/BP-to-Target in Meters)
*4. Target Elevation: “	_____” (in Feet/MSL)
*5. Target Description: “	_____”
*6. Target Location: “	_____” (Latitude/Longitude or Grid Coordinates or Offsets or Visual)
*7. Type Mark: “	_____” Code: “_____” (WP, Laser, IR, Beacon) (Actual Code)
Laser to Target Line: “	_____ Degrees”
*8. Location of Friendlies: “	_____”
Position Marked By: “	_____”
9. Egress: “	_____”
Remarks (as appropriate): “	_____” (Threats, Restrictions, Danger Close, Attack Clearance, SEAD, Abort Codes, Hazards)
“Time on Target (TOT): “	_____” or Time to Target (TTT): “Stand by _____ plus _____, Hack. ”
NOTE: When identifying position coordinates for joint operations, include the map datum data. DESERT STORM operations have shown that simple conversion to latitude/longitude is not sufficient. The location may be referenced on several different databases; for example, land-based versus sea-based data.	

Figure F-3. TACP/FAC(A) to Fixed-Wing Flight Lead

Specific target description: "HOG 01, target is armor column in choke point."

Confirm target location (visual reference, if possible): "PL 385211, 4 klicks (KMs)¹ north of river bridge."

Confirm associated threat (type and location): "ZSU, two klicks (KMs) north."

Employment method (add where/when applicable): "Your sector west of road running through target area. Sectoring sequentially, TOT 3 minutes. Ready, ready, HACK."

Attack restrictions (if any): "HOG 01, attack south to north only."

Specific role: "Cover rotary-wing reposition."

Additional information as necessary (coordination call, TOT, laser code info, etc.):
"Call 60 seconds."

¹TACP/FAC(A) normally give IP-to-target distances in nautical miles. Friendly positions and threat distances are normally given in meter/kilometers.

Figure F-4. Example of Mission Commander to Fixed-Wing Flight Lead Brief

REFERENCES

J oint

J oint Publication 0-2, Unified Action Armed Forces (UNAAF)

J oint Publication 3-01.4, J oint Tactics, Techniques, and Procedures for J oint Suppression of Enemy Air Defenses

J oint Publication 3-09.3, J oint Tactics, Techniques, and Procedures for Close Air Support (CAS)

J oint Publication 3-52, Doctrine for J oint Airspace Control in a Combat Zone,

J oint Publication 3-56, Command and Control Doctrine

J oint Publication 3-56.1, Command and Control for J oint Air Operations,

Multiservice

FM 90-38/MCRP 3-25B/NWP 60-2.1/AFTTP(I) 3-2.5, Multiservice Air-Air, Air-Surface, Surface-Air Brevity Codes

Army

FM 1-111, Aviation Brigades

FM 6-20, Fire Support in the Air Land Battle

Marine Corps

MCWP 3-25.3, Marine Air Command and Control System Handbook, Draft Mar 1997

FMFM 5-40, Offensive Air Support

FMFM 5-41, Close Air Support and Close-In Fire Support

FMFM 6-18, Techniques and Procedures for Fire Support Planning/ Coordination

Air Force

ACCR 55-26, J oint Live Fire Training Operations Fighter/ Bomber/ Reconnaissance/ Airlift/ Special Operations

AFI 11-214, Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations

GLOSSARY

PART I—ABBREVIATIONS AND ACRONYMS

A

a/c	aircraft
A2C2	Army airspace command and control
ABCCC	airborne battlefield command and control center
ABF	attack by fire
ACA	airspace coordination area
ACCR	Air Combat Command Regulation
ACE	aviation combat element (MAGTF)
ACM	airspace coordination measures
AD	air defense
ADA	air defense artillery
ADAM	area denial artillery munition
AFARN	Air Force air request net
AFDC	Air Force Doctrine Center
AFI	Air Force Instruction
AFTTP(I)	Air Force Tactics, Techniques, and Procedures (Interservice)
AGM	air to ground missile
AIRSUPREQ	air support request
ALSA Center	Air Land Sea Application Center
ALO	air liaison officer
alt	alternate
AM	amplitude modulation
AMC	air mission commander
ammo	ammunition
ANGLICO	air/naval gunfire liaison company
AO	area of operations
AOC	air operations center (USAF)
AP	armor piercing
APAM	antipersonnel antimateriel
APERS-T	antipersonnel w/tracer
APICM	armor piercing improved conventional munition
arty	artillery
ASOC	air support operations center
ATACMS	Army Tactical Missile System
ATDL-1	Army tactical data link
ATO	air tasking order
attn	attention
avn bde	aviation brigade
avn cdr	aviation commander
avn LNO	Army aviation liaison officer
AWACS	Airborne Warning and Control System

B

BAT	brilliant antitank
BBDPICM	base bleed dual-purpose improved conventional munitions
BCD	battlefield coordination detachment
BD	base detonating

BDA	battle damage assessment
blk	block
bn	battalion
bp	battle position
C	
C2	command and control
C3	command, control, and communications
CAS	close air support
CBU	cluster bomb unit
CE	command element
chem	chemical
co	company
COA	course of action
COLT	combat observation and lasing teams
COMARFOR	Commander, Army Forces
COMSEC	communications security
CP	concrete piercing
CPHD	copperhead
CSAR	combat search and rescue
CSSE	combat service support element
CVT	controlled variable time
CVW	carrier air wing
D	
DA	Department of the Army
DASC	direct air support center
del	delay
div	division
DPICM	dual-purpose improved conventional munition
DS	direct support
DTV	day television
E	
EA	engagement areas
ECM	electronic countermeasure
EOTDA	electrooptical tactical decision aids
ER	extended range
ETAC	enlisted terminal air controller
EW	electronic warfare
F	
FA	field artillery
FAC	forward air controller
FAC(A)	forward air controller airborne
FAE	fuel air explosive
FASCAM	family of scatterable mine
FCT	fire control team
FD	fire direction
FDC	fire direction center
ft	feet
FIST	fire support teams

FLIR	forward-looking infrared
FM	frequency modulation; field manual
FO	forward observer
FOS	future operations section
FOV	field of view
FS	fire support
FSC	fire support coordinator
FSCC	fire support coordination center
FSCL	fire support coordination line
FSCM	fire support coordination measure
FSE	fire support element
FSO	fire support officer
G	
G-2/S2	intelligence officer
G-3/S3	operations officer
GCE	ground combat element
gnd	ground
GP	general purpose
GPS	global positioning system
GS	general support
H	
HARM	high-speed antiradiation missile
HC	hexachloroethane (smoke)
HDC	helicopter direction center
HE	high explosive
HEAT	high explosive antitank
HEI	high explosive incendiary
HEP	high explosive plastic
HES	high explosive spotting
HF	high frequency
HPT	high payoff targets
HQ	headquarters
I	
ICM	improved conventional munition
IDM	improved data modem
i.e.	that is
IEWSE	intelligence and electronic warfare support element
IFF	identification, friend or foe
Illum	illumination
INFLTREP	in-flight report
IP	initial point
IPB	intelligence preparation of the battlespace
IR	infrared
ITO	integrated tasking order

J

J-Laser	joint laser
J-SEAD	joint suppression of enemy air defenses
J AAT	joint air attack team
J AOC	joint air operations center
J FACC	joint force air component commander
J FC	joint force commander
J TTP	joint tactics, techniques, and procedures

K

kHz	kilohertz
km	kilometer

L

LANTIRN	low-altitude navigation and targeting infrared for night
lat	latitude
LGB	laser guided bomb
LGW	laser guided weapons
LLTV	low light level television
LNO	liaison officer
long	longitude
LST	laser spot tracker
LTD	laser target designator
LTL	laser-target-line
LUU	launch utility unit

M

m	meter
MACCS	Marine Corps air command and control system
MAGTF	Marine air-ground task force
MARFOR	Marine Corps forces
max	maximum
MCCDC	Marine Corps Combat Development Command
MCPDS	Marine Corps Publication Distribution System
MCRP	Marine Corps Reference Publication
MCWP	Marine Corps Warfighting Publication
MEF	Marine expeditionary force
MEU	Marine expeditionary unit
MG	machine gun
MHz	megahertz
MILSTRIP	Military Standard Requisitioning and Issue Procedure
MLRS	multiple launch rocket system
min	minimum
mm	millimeter
MSL	mean sea level
MT	mechanical time
mtr	mortar
MTSQ	mechanical time super quick
mvr	maneuver

N

NADGE	NATO Air Defense Ground Environment
NAO	naval aviation officer
NATO	North Atlantic Treaty Organization
NAVSOP	Navy Standing Operations Procedures
NDC	Naval Doctrine Command
NGLO	naval gunfire liaison officer
NSFS	naval surface fire support
NVG	night vision goggles
NWP	Naval Warfare Publication

O

OAS	offensive air support
OPCON	operational control

P

PD	point detonating
PLS	position locating system
plt	platoon
pub	publication
pri	primary

Q

Q	quick
----------	-------

R

RAAM	remote antiarmor mine
RAP	rocket assisted projectile
regt	regiment
rein	reinforcement
req'd	required
RPM	rounds per minute
ROE	rules of engagement
RTF	return-to-force

S

SACC	supporting arms coordination center
SALT	supporting arms liaison team
SATCOM	satellite communication
SDZ	surface danger zone
SEAD	suppression of enemy air defenses
SINCGARS	single-channel ground and airborne radio system
SLAM	standoff land attack missile
smk	smoke
SOC	special operations capable
SOP	standing operating procedure
SPMAGTF	special purpose MAGTF
SSB	single side band
sust	sustained

T

TAC(A)	tactical air coordinator (airborne)
TACAIR	tactical air
TACC	tactical air command center
TACON	tactical control
TACP	tactical air control party
TADIL	tactical digital information link
TAOC	tactical air operations center (USMC)
tgt	target
ti	time
tm	team
TODs	time of day
TOT	time on target
TOW	tube launched, optically tracked, wire-command guided missile
TRADOC	United States Army Training and Doctrine Command
TRP	target reference point
TTP	tactics, techniques, and procedures
TTT	time to target
TVS	television system

U

UAV	unmanned aerial vehicle
UCN	unmanned aerial vehicle communications
UHF	ultrahigh frequency
UNAAF	Unified Action Armed Forces
USA	United States Army
USAF	United States Air Force
USMC	United States Marine Corp
USN	United States Navy
UTM	universal transverse mercator

V

VHF	very high frequency
VT	variable time

W

WILCO	will comply (radio communication)
WOC	wing operations center
WODs	word of day
WP	white phosphorus

X

XO	executive officer
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zsu	Soviet antiaircraft cannon
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PART II—TERMS AND DEFINITIONS

airborne battlefield command and control (ABCCC). An airborne platform with threat updates and communications assistance to include the relay of immediate J AAT requests and J -Fire briefings.

air liaison officer (ALO). An officer (aviator/pilot) attached to a ground unit who functions as the primary advisor to the ground commander on air operations matters (J oint Pub 1-02). Each tactical air control party (TACP) has an Air Force officer. The officer advises the Army commander on all aspects of the employment of tactical air power to include tactical airlift, tactical reconnaissance, battlefield interdiction, and close air support. Serves as the focal point for Air Force coordination in joint air-ground operations and assists in the planning for tactical air support of ground operations. The ALO supervises the activities of TACP personnel and is responsible for all subordinate TACPs. At the brigade and battalion levels, this officer will remain current to provide CAS terminal attack control.

air support operations center (ASOC). An agency of a tactical air control system collocated with a corps headquarters or an appropriate land force headquarters, which coordinates and directs close air support and other air support. See also tactical air control center (J oint Pub 1-02). An element of a tactical air control system that is usually located at corps level. The ASOC is subordinate to the J AOC and is designed to plan, coordinate, and direct tactical air operations in support ground forces.

aviation liaison officer (AVN). An Army officer from an Army helicopter unit who establishes liaison with the Army ground maneuver force headquarters when a command relationship between the two units has been established or is anticipated.

battlefield coordination detachment (BCD). The BCD is a land component commander (LCC) liaison element which is collocated with the joint air operations center (J AOC). The BCD processes land forces requests for tactical air support, monitors and interprets the land battle situation for the J AOC and provides the necessary interface for the exchange of current intelligence and operational data.

close air support (CAS). Air action against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces (J oint Pub 1-02). Any TACAIR fighter or attack aircraft may be tasked to provide CAS.

close operations. Close operations at any echelon comprise the current activities of major committed combat elements, together with their immediate combat support and combat service support. At the operational level, close operations comprise the efforts of large tactical formations—corps and divisions—to win current battles. At the tactical level, close operations comprise the efforts of smaller tactical units to win current engagements.

enlisted terminal attack controller (ETAC). Enlisted person who is specifically trained and certified by the unit commander to perform the terminal attack control function routinely.

fire support coordinator (FSC). The senior field artillery officer at each echelon above platoon level who serves as the principal advisor to the commander for the coordination of all fire support within the unit's area of responsibility.

fire support elements (FSE). Found in Army maneuver battalions, cavalry squadrons, regiments, brigades, divisions, and corps. Fire support planning and coordination is done in the fire support element.

fire support officer (FSO). A full-time coordinator of all fire support and the field artillery commander's representative at the supported headquarters.

fire support team (FIST). Coordinates fire support for Army tank, mechanized infantry, and infantry companies, and cavalry troops. The FIST chief is normally an Army field artillery lieutenant. The FIST has five major duties:

1. Planning fires
2. Locating targets—requesting and adjusting fires
3. Coordinating fire support
4. Reporting battlefield information
5. Providing target location to CAS aircraft when a FAC is not available

forward air controller (FAC). An officer (aviator/pilot) member of the tactical air control party who, from a forward ground or airborne position, controls aircraft in close air support of ground troops (Joint Pub 1-02).

forward edge of the battle area (FEBA). The foremost limits of a series of areas in which ground combat units are deployed, excluding the areas in which the covering or screening forces are operating, designated to coordinate fire support, the positioning of forces, or the maneuver of units. (Joint Pub 1-02)

forward line of own troops (FLOT). A line which indicates the most forward position of friendly forces in any kind of military operation at a specific time.

ground/vehicular laser locator designator (G/VLLD). Provides distance, direction, and vertical angle as well as laser illumination termed designation for Army, Navy and Air Force guided munitions.

gunline. A term used to describe the heading that the attack helicopters will use to attack the target, (for example, gunline 050 means they will be attacking the targets on a heading 050 degrees).

Have Quick. An electronic counter-countermeasure modification which provides a frequency hopping capability to selected radios.

initial point (IP). A well-defined point, easily distinguishable visually and/or electronically used as a starting point for the bomb run to the target. (Joint Pub 1-02)

joint air attack team (J AAT). A coordinated attack by rotary and fixed-wing aircraft normally supported by artillery or naval surface fire support. Ground or airborne electronic warfare systems may also support the J AAT.

operational control (OPCON). The authority delegated to a commander to perform those functions of command over subordinate forces involving the composition of subordinate forces, the assignment of tasks, the designation of objectives, and the authoritative direction necessary to accomplish the mission. Operational control includes directive authority for joint training. Operational control should be exercised through the commanders of assigned normal organizational units or through the commanders of subordinate forces established by the commander exercising operational control. Operational control normally provides full authority to organize forces as the operational commander deems necessary to accomplish assigned missions, and to retain or delegate operational control or tactical control as necessary. Function, time, or location may limit operational control. It does not, of itself, include such matters as administration, discipline, internal organization, and unit training. (Joint Pub 1-02)

pave penny. A passive laser energy detection system used by the Air Force as an aid in target location and identification.

reasonable assurance. A circumstance under which the maneuver commander allows aircrew to attack targets and release ordnance without positive control. Specific employment criteria ensure that the maneuver commander, the controller, and aircrew are reasonably assured, during each mission, that ordnance will not adversely affect friendly forces.

reattack. Another attack made upon the same target array by the same attacking aircraft.

reconnaissance. A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area.

standing operating procedures (SOP). A set of instructions covering those features of operations which lend themselves to a definite or standardized procedure without loss of effectiveness. The procedure is applicable unless ordered otherwise. Also called standard operating procedure.

suppression. Temporary or transient degradation of the performance of a weapon system below the level needed to fulfill its mission objectives by an opposing force.

suppression of enemy air defenses (SEAD). That activity which neutralizes, destroys, or temporarily degrades enemy air defenses in a specific area by physical attack and/or electronic warfare.

surface-to-air missile (SAM). A guided missile launched from land or sea for the purpose of destroying fixed- or rotary-wing aerial vehicles.

tactical aircraft (TACAIR). Normally all tactical aircraft but for the J AAT, only tactical fighter/bomber aircraft to distinguish from attack helicopters.

tactical air command center (TACC) USMC/joint air operations center (J AOC) USAF. The principal air operations installation (land or ship based) from which all aircraft and air warning functions of tactical air operations are controlled. (J oint Pub 1-02)

tactical air control party (TACP). A subordinate operational component of a tactical air control system designed to provide air liaison to land forces and for the control of aircraft. (J oint Pub 1-02)

time on target (TOT). The time an aircraft is scheduled to attack a target; the time an aircraft actually attacks the target.

universal transverse mercator (UTM). The grid coordinate reference system commonly used by ground forces for identifying a location on the earth's surface.

vinson. The current series of secure voice equipment used in conjunction with FM radio.

WILCO. Radio communication for "will comply."

zsu. Soviet anti-aircraft cannon.

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